North America Woods

U.S. Forest Service

I. NORTH AMERICAN WOODS

By

FOREST PRODUCTS LABORATORY,

FOREST SERVICE,

UNITED STATES DEPARTMENT OF AGRICULTURE

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I. NORTH AMER-

United States Forest

The following data on certain woods of North America are based on an extensive series of tests of small specimens free of defects. All the tests were conducted under a uniform procedure, so that the results are strictly comparable. Analysis of the test figures has made it possible to establish definite density-strength relations, which are represented by the equations given in the first section of the table (Table 1). These equations are all of the parabolic type, the degree being determined to the nearest quarter-unit. By substituting the appropriate specific gravity for a given species (columns 8 and 9) in the equation for any property, the value of the corresponding property may be obtained.

In most species, however, there is a very considerable departure of average test results from the general equation values, although very few species, thus far investigated, are either wholly above or wholly below normal, all properties considered. Since the deviation of a property from the normal value as determined by the equation often indicates the special fitness or unfitness of the species for a particular use, it becomes necessary to supplement the equations with departure factors, for the properties of each species. Such factors, expressed as *percentages* and listed in order below the respective equations, make up the second part of Table 1. By multiplying the value, F, computed by the equation, by the proper correction factor, the actual average value for the property and species in question may be determined.

Example: To find the modulus of rupture of air-dried shagbark hickory. The finding list shows this to be No. 62, *Hicoria ovata*. From the equation of column 15 we find $F = 18.1\ D_d^{1.25}$. For No. 62 we find (column 9) $D_d = 0.724$ and (column 15) correction factor = 119 %, whence

$F = 1.19 \times 18.1 \times (0.724)^{1.25} = 14.4$ kg/mm^2 $= 14.4 \times 1422 =$ 20 500 lb./in.^{2}

The test methods that were used conform to Tentative Standard D143-24T of the American Society for Testing Materials, as set forth in *Proc. A. S. T. M.* 939; 24. (General description in U. S. Dept. Agr., *Bull.* No. 556.) The principal data relating to the procedure for each kind of test are summarized as follows:

Shrinkage in Volume.—Specimen 5.08 × 5.08 × 15.24 cm (2 × 2 × 6 in.). Volume determined when green (unseasoned) and after oven-drying to constant weight at 100°C. Specimens thoroughly air-seasoned prior to drying in oven.

Shrinkage, Radial and Tangential.—Specimen 2.54 × 10.16 × 2.54 cm (1 × 4 × 1 in.). Width measured when green (unseasoned) and after oven-drying to constant weight at 100°C. Specimens thoroughly air-seasoned prior to drying in oven.

Static Bending.—Specimen 5.08 × 5.08 × 76.20 cm (2 × 2 × 30 in.). Center loading, 71.12 cm (28 in.) span. Load applied by testing machine head moving 0.254 cm (0.10 in.) per min. Total work is defined as that obtained by continuing the test until either a 15.24 cm (6 in.) deflection is reached or the load falls to 90.7 kg (200 lb.) or less.

Impact Bending.—Specimen and span as above. 22.7 kg (50 lb.) hammer dropped first from 2.54 cm (1 in.) height, next from 5.08 cm (2 in.) height, etc., up to 25.4 cm (10 in.), then from height increments of 5.08 cm (2 in.) until failure.

Compression Parallel to Grain.—Specimen 5.08 × 5.08 × 20.32 cm (2 × 2 × 8 in.). End load, testing machine head moving 0.061 cm (0.024 in.) per min.

Les données indiquées ici, relatives à certains bois de l'Amérique du Nord, sont basées sur une série d'expériences faites sur de petites éprouvettes exemptes de défauts. Tous les essais ayant été effectués suivant une procédure uniforme, les résultats sont donc strictement comparables. L'analyse des chiffres obtenus aux essais a permis d'établir des relations définies entre la densité et la résistance, qui sont représentées par les équations inscrites dans la première section de la table (Table 1). Ces équations sont toutes du type parabolique, le degré étant déterminé au quart d'unité le plus proche. En substituant le poids spécifique approprié pour une espèce donnée (colonnes 8 et 9) dans l'équation relative à une propriété donnée, on peut obtenir la valeur correspondante de la propriété.

Cependant pour la plupart des espèces il y a un écart considérable entre les résultats moyens des essais et les valeurs déduites de l'équation générale; pour autant que les expériences effectuées l'ont démontré, il n'y a qu'un petit nombre d'espèces qui sont, ou en entier au-dessus ou en entier au-dessous de la normale pour toutes les propriétés considérées. Comme l'écart d'une propriété de la valeur normale, ainsi qu'elle est déterminée par l'équation, indique souvent la convenance spéciale de l'espèce pour un usage particulier, ou sa non-convenance, il est nécessaire de compléter les équations par des facteurs de correction pour les propriétés de chaque espèce. Ces facteurs, exprimés en pourcentage et inscrits dans l'ordre au-dessous des équations respectives, constituent la deuxième partie de la Table 1. En multipliant la valeur F calculée au moyen de l'équation par le facteur de correction convenable, on peut déterminer la valeur moyenne de la propriété de l'espèce en question.

Exemple: Soit à déterminer le module de rupture du "shagbark hickory" séché à l'air. La liste de recherches montre qu'il s'agit du No. 62 *Hicoria ovata*. De l'équation de la colonne 15 on trouve $F = 18{,}1\ D_d^{1{,}25}$. On trouve pour le No. 62 (colonne 9) $D_d = 0{,}724$ et (colonne 15) le facteur de correction = 119 %, d'où

$F = 1{,}19 \times 18{,}1 \times (0{,}724)^{1{,}25} = 14{,}4$ kg/mm^2 $= 14{,}4 \times 1\,422 =$ 20 500 lb./in.^{2}

Les méthodes d'essais qui ont été utilisées sont conformes à l'examen type D143-24T de la société américaine pour l'essai des matériaux, ainsi qu'elles sont décrites dans *Proc. A. S. T. M.* 939: 24 (*cf.* U. S. Dept. Agr. *Bull.* 556). Les données principales relatives à la procédure pour chaque sorte d'essai sont rassemblées ci-dessous:

Retrait en volume.—Eprouvette 5,08 × 5,08 × 15,24 cm (2 × 2 × 6 pouces). Le volume est déterminé lorsque le bois est vert, puis, après séchage à poids constant au four à 100°C. Avant le séchage au four, les éprouvettes sont complètement séchées à l'air.

Retrait radial et tangentiel.—Eprouvette 2,54 × 10,16 × 2,54 cm (1 × 4 × 1 pouce). La largeur est mesurée sur le bois vert et après séchage à poids constant, au four à 100°C. Avant le séchage au four, les éprouvettes sont complètement séchées à l'air.

Essai de flexion statique.—Eprouvette 5,08 × 5,08 × 76,20 cm (2 × 2 × 30 pouces); charge centrale; portée 71,12 cm (28 pouces). La charge est appliquée par une machine à essai dont la pièce mobile se déplace de 0,254 cm (0,10 pouces) à la minute. Le travail total est défini par celui qu'on obtient en continuant l'essai jusqu'à ce qu'une flèche de 15,25 cm soit obtenue, ou que la charge tombe à 90,7 kg (200 lb.) ou moins.

ICAN WOODS

Products Laboratory

Die hier angegebenen Werte bestimmter nordamerikaniseher Hölzer ergeben sieh aus einer ausgedehnten Serie von Prüfungen an einer kleinen Zahl von fehlerfreien Arten. Alle Prüfungen sind bei einheitliehem Vorgange ausgeführt worden, so, dass sie direkt vergleichbar sind. Die Analysen der Zahlenwerte der Prüfungsergebnisse machten es möglich gewisse Beziehungen zwisehen Diehte und Festigkeit aufzustellen, die durch Gleichungen im ersten Absehnitt der Tafel 1 wiedergegeben sind. Diese Gleichungen sind alle vom parabolisehen Typus, der Exponent in der Gleichung ist auf die nächste Viertel-Einheit bestimmt. Durch Einsetzung des entsprechenden spezifisehen Gewichtes für eine bestimmte Art (Reihe 8 und 9) in die Gleichung für ihrgend eine Eigenschaft, erhält man den Wert für die entsprechende Eigenschaft.

Bei vielen Arten jedoch ist eine bemerkenswerte Abweichung des durchschnittlichen Wertes des Prüfungsergebnisses von dem Werte, der sich aus der allgemeinen Gleichung ergibt, vorhanden. Es gibt indessen nur sehr wenige Arten, so weit untersucht, deren berücksichtigten Eigenschaften zur Gänze entweder über oder unter dem normalen Werten liegen. Da die Abweichung einer Eigenschaft, von dem durch die Gleichung erhaltenen Wert, häufig die besondere Eignung oder Nichteignung einer Art für eine besondere Verwendung anzeigt, wird es notwendig, für die Eigenschaft jeder einzelnen Art die Gleichung durch einen Abweichungsfaktor zu ergänzen. Solche Faktoren, in *Prozenten* ausgedrückt, befinden sich geordnet unter den entsprechenden Gleichungen und machen den zweiten Teil der Tafel 1 aus. Durch Multiplikation des Wertes F, der nach der Gleichung gefunden ist, mit dem eigenen Korrektionsfaktor, erhält man richtige Mittelwerte für die Eigenschaft des fraglichen Musters.

Beispiel: Es ist die Bruchfestigkeit von lufttrockenem Hykorynussbaum zu finden. Die Nachschlagsliste zeigt, dass dies No. 62 *Hicoria ovata* ist. Aus der Gleichung der Reihe 15 findet man $F = 18{,}1\ D_d^{1{,}25}$. Für No. 62 findet man (Reihe 9) $D_d = 0{,}724$ und (Reihe 15) den Korrektionsfaktor = 119 %, mithin

$$F = 1{,}19 \times 18{,}1 \times (0{,}724)^{1{,}25} = 14{,}4\ \text{kg/mm}^2$$

Die angewandten Prüfungsmethoden entsprechen der Standard Prüfung D143-24T der American Society for Testing Materials, wie es in *Proc. A. S. T. M.* 939; 24 (*cf.* U. S. Dep. Agr. *Bull.* 556) mitgeteilt wird. Die hauptsächlichsten Angaben, die den Vorgang bei jeder besonderen Prüfung bezeichnen, sind zusammengestellt, die folgenden:

Volumabnahme (Schwindung).—Muster 5,08 × 5,08 × 15,24 cm. Das Volumen wurde in unausgetrocknetem Zustande und dann nach der Trocknung im Ofen bei 100°C, bis zum konstantem Gewicht bestimmt. Die Proben waren vor der Ofentrocknung vollständig lufttrocken.

Volumabnahme, tangential und radial.—Muster 2,54 × 10,16 × 2,54 cm. Die Masse sind im ungetrocknetem Zustande abgenommen und dann nach der Ofentrocknung bei 100°C, bis zum konstantem Gewicht bestimmt. Die Proben waren vor der Ofentrocknung vollständig lufttrocken.

Statischer Biegeversuch.—Muster 5,08 × 5,08 × 76,20 cm, Mittelbelastung, 71,12 cm Spannweite, Belastung durch eine Festigkeitsmaschine, derart, dass die Durchbiegung 0,254 cm in der Minute beträgt. Die gesammt Arbeit ist diejenige, die bei

I valori qui riportati per certi legni dell'America del Nord sono il risultato di una estesa serie di prove eseguite sopra un piccolo numero di specie senza difetti. Tutti i saggi sono stati condotti con lo stesso metodo, per modo che i risultati sono strettamente confrontabili. L'esame dei valori numerici ha permesso di stabilire alcune relazioni fra densitá e resistenza, le quali sonò rappresentate dalle equazioni riprodotte nella prima parte della tabella (Tabella 1). Queste equazioni sono tutte di tipo parabolico, e il grado è determinato con l'approssimazione del quarto dell'unità.

Introducendo nell'equazione per una data proprietà il peso specifico di una determinata specie (colonne 8 e 9) si ottiene il valore della proprietà corrispondente.

In molte specie la media dei risultati dei saggi scarta notevolmente dai valori che si ottengono dall'equazione generale; solo in poche però, tutti i valori sono sempre al di sopra e sempre al di sotto dei normali.

Siccome lo scarto di una proprietà dal valore risultante dall' equazione sta spesso ad indicare se una specie è adatta o no ad uno speciale impiego, è necessario completare le equazioni con dei fattori di correzione per le proprietà di ogni specie. Questi fattori, espressi in percento, sono riportati sotto le equazioni corrispondenti e costituiscono la seconda parte della Tabella 1. Moltiplicando il valore F dato dall'equazione per il rispettivo fattore di correzione, si ottengono valori medi esatti per la proprietà del campione in questione.

Esempio: Si debba trovare la resistenza alla rottura dello "shagbark hickory" seccato all'aria. Dall'elenco di riferimento si ricava che si tratta del No. 62, *Hicoria ovata.* Dall'equazione della colonna 15 si ha $F = 18{,}1\ D_d^{1{,}25}$. Per il No. 62 si trova $D_d = 0{,}724$ (colonna 9) e come fattore di correzione 119 % (colonna 15), per modo che si ha

$$F = 1{,}19 \times 18{,}1 \times (0{,}724)^{1{,}25} = 14{,}4\ \text{kg/mm}^2$$

I metodi di prova adoperati corrispondono alle norme D143-24T della American Society for Testing Materials, quali si trovano indicate nei *Proc. A. S. T. M.* 939; 24 (*v.* U. S. Dep. Agr. *Bull.* 556). Le indicazioni principali riferentisi a ogni specie di saggio sono le seguenti:

Contrazione di volume.—Dimensioni della provetta 5,08 × 5,08 × 15,24 cm. Il volume viene determinato su legno non stagionato e su legno seccato in forno a 100°C fino a costanza di peso. I provini vengono seccati completamente all'aria prima che nel forno.

Diminuzione di volume, tangenziale e radiale.—Dimensioni della provetta 2,54 × 10,16 × 2,54 cm. La larghezza viene misurata su legno non stagionato e su legno seccato in forno a 100°C fino a costanza di peso. Le provette vengono seccate completamente all'aria prima che nel forno.

Flessione statica.—Dimensioni della provetta 5,08 × 5,08 × 76,20 cm. Carico centrale, distanza tra gli appoggi 71,12 cm. Il carico viene applicato con una macchina di prova in modo che la freccia di incurvamento cresca con la velocità di 0,254 cm al minuto. Il lavoro totale è quello che si ottiene prolungando il saggio finchè o si raggiunge una freccia di 15,24 cm o il carico si abbassa a 90,7 kg o meno.

Compression Perpendicular to Grain.—Specimen 5.08 × 5.08 × 15.24 cm (2 × 2 × 6 in.). Load applied to side through a steel plate 5.08 cm (2 in.) wide laid across center of piece and at right angles to its length, ⅓ of surface being thus directly subjected to compression; testing machine head moving 0.061 cm (0.024 in.) per min.

Shear Parallel to Grain.—Specimen 5.08 × 5.08 × 6.35 cm (2 × 2 × 2.5 in.). Undercut at one end to permit shear over area 5.08 × 5.08 cm (2 × 2 in.); testing machine head moving 0.038 cm (0.015 in.) per min.

Tension Perpendicular to Grain.—Specimen as above. Transverse recess bored at each end to permit gripping for tension over 5.08 × 2.54 cm (2 × 1 in.) area; testing machine head moving 0.635 cm (0.25 in.) per min.

Hardness.—Specimen 5.08 × 5.08 × 15.24 cm (2 × 2 × 6 in.). Load required to embed a steel ball having a maximum cross-sectional area of 1 cm^2 to ½ its diam.; testing machine head moving 0.635 cm (0.25 in.) per minute.

Cleavage Parallel to Grain.—Specimen 5.08 × 5.08 × 9.525 cm (2 × 2 × 3¾ in.). Transverse recess bored at one end to permit gripping for cleavage of specimen over 5.08 cm (2 in.) width and along a 7.62 cm (3 in.) length; testing machine head moving 0.635 cm (0.25 in.) per min.

Conversion Factors

Multiply	By	To obtain
Kg per mm^2	1422	lb. per $in.^2$
Kg-mm per mm^3	1422	in.-lb. per $in.^3$
Meters	39.37	in.
Kg	2.205	lb.
Kg per mm of width	56	lb. per in. of width

Essai de flexion par choc.—Eprouvette et portée comme ci-dessus. Un marteau de 22,7 kg (50 lb.) tombe premièrement d'une hauteur de 2,54 cm (1 pouce), ensuite de 5,08 cm (2 pouces) de haut, etc., jusqu'à 25,4 cm (10 pouces), ensuite par augmentations successives de hauteur de 5,08 cm (2 pouces) jusqu'à rupture.

Compression parallèle à la fibre.—Eprouvette 5,08 × 5,08 × 20,32 cm (2 × 2 × 8 pouces). Charge finale, machine à essai dont la pièce mobile se déplace de 0,061 cm par minute.

Compression perpendiculaire à la fibre.—Eprouvette 5,08 × 5,08 × 15,24 cm (2 × 2 × 6 pouces). Charge appliquée sur le côté par l'intermédiaire d'une plaque d'acier de 5,08 cm de largeur disposée au milieu de la pièce et normalement à sa longueur, de façon que ⅓ de la surface soit soumis à la compression; machine à essai dont la pièce mobile se déplace de 0,061 cm (0,024 pouce) par minute.

Cisaillement parallèle à la fibre.—Eprouvette 5,08 × 5,08 × 6,35 cm (2 × 2 × 2½ pouce). Ecrénée à une extrémité pour permettre le cisaillement sur une surface de 5,08 × 5,08 cm (2 × 2 pouces); machine à essai dont la pièce mobile se déplace de 0,038 cm (0,015 pouce) par minute.

Traction perpendiculaire à la fibre.—Eprouvette comme ci-dessus. Niche transversale découpée à chaque extrémité de façon à permettre la traction sur une surface de 5,08 × 2,54 cm (2 × 1 pouce). Machine à essai dont la pièce mobile se déplace de 0,635 cm (0,25 pouce) par minute.

Dureté.—Eprouvette 5,08 × 5,08 × 15,24 cm (2 × 2 × 6 pouces). Charge nécessaire pour enfoncer une bille d'acier ayant une section maximum de 1 cm^2, de la moitié de son diamètre. Machine à essai dont la pièce mobile se déplace de 0,635 cm (0,25 pouce) par minute.

Clivage parallèle à la fibre.—Eprouvette 5,08 × 5,08 × 9,525 cm (2 × 2 × 3¾ pouces). Niche transversale découpée à une extrémité de façon à permettre le clivage de l'éprouvette sur une largeur de 5,08 cm (2 pouces) et le long de 7,62 cm (3 pouces); machine à essai dont la pièce mobile se déplace de 0,635 cm (0,25 pouce) par minute.

WOODS OF THE PHILIPPINE ISLANDS

The Bureau of Forestry and the Bureau of Science of the Philippine Islands

Introduction

Density and strength values for five woods of commerce have been determined. The testing methods used and manner of displaying the results are identical with those used by the U. S. Forest Products Laboratory and the results have therefore been incorporated at the end of Table 1 below.

CANADIAN WOODS

A number of the species listed in Table 1 below have also been tested by the Canadian Forest Products Laboratory, using samples obtained from trees grown in Canada. As far as can be definitely determined, these woods are substantially the same in properties as like species grown in the United States.

BOIS DES ILES PHILIPPINES

Bureau de Sylviculture et Bureau de Science des Iles Philippines

Introduction

Les valeurs de densité et de résistance ont été déterminées pour cinq bois du commerce. Les méthodes d'essais utilisées, et la façon de disposer les résultats sont identiques à celles utilisées par le U. S. Forest Products Laboratory (voir ci-dessus); c'est pourquoi les résultats ont été incorporés à la fin de la Table 1.

BOIS CANADIENS

Un certain nombre d'espèces mentionnées au bas de la Table 1 ont aussi été essayées par le "Laboratoire des Produits Forestiers Canadiens" qui employa des échantillons provenant d'arbres ayant poussé au Canada. Pour autant qu'on peut le déterminer d'une façon définie, ces bois sont les mêmes, au point de vue de leurs propriétés, que ceux des mêmes espèces croissant aux États-Unis.

fortgesetzter Prüfung entweder eine 15,24 cm Durchbiegung erreicht, oder das Gewicht fällt auf 90,7 kg oder weniger.

Schlagbiegeversuch.—Muster und Grösse wie oben. Ein 22,7 kg Hammer fällt zuerst von 2,54 cm dann von 5,08 cm u. s. w. Höhe herunter, bis 25,4 cm, von hier an, in Höhenzunahmen um 5,08 cm bis zum Bruch.

Druckversuch parallel zur Faserrichtung.—Muster 5,08 × 5,08 × 20,32 cm. Endlast, Festigkeitsmaschine derart, dass Zusammendrückung in der Minute 0,061 cm beträgt.

Druck senkrecht zur Faserrichtung.—Muster 5,08 × 5,08 × 15,24 cm. Das Gewicht an die Seite drückt auf eine Stahlplatte von 5,08 cm Weite, die um die Mitte des Stückes in rechten Winkeln zu seiner Länge angelegt ist, wodurch ⅓ der Oberfläche dem Drucke ausgesetzt wird, derart, dass die Zusammendrückung 0,061 cm in der Minute beträgt.

Scherversuch, parallel zur Faserrichtung.—Muster 5,08 × 5,08 × 6,35 cm. An einem Ende unterschnitten, um eine Scherung über eine Fläche von 5,08 × 5,08 cm zu gestatten; Scherung 0,038 cm in der Minute.

Zugversuch senkrecht zur Faserrichtung.—Muster so wie oben. Kreuzweise an jedem Ende gebohrt um die Zugkraft auf eine Fläche von 5,08 × 2,54 cm wirken zu lassen. Zug der Maschine 0,635 cm in der Minute.

Härte.—Muster 5,08 × 5,08 × 15,24 cm. Das notwendige Gewicht um eine Stahlkugel von einem maximalen Querschnitt von 1 cm bis zur Hälfte seines Durchmessers einzudrücken. Bewegung der Maschine 0,635 cm in der Minute.

Spaltung parallel zur Faserrichtung.—Muster 5,08 × 5,08 × 9,525 cm. Kreuzweise an einem Ende gebohrt für die Fassung des Musters zur Spaltung über eine Weite von 5,08 cm und 7,62 cm der Länge nach. Spaltung 0,635 cm in der Minute.

Flessione per urto.—Dimensioni come sopra. Un martello di 22,7 kg cade prima di una altezza di 2,54 cm, poi di 5,08 cm ecc. fino a 25,4 cm; da 25,4 in poi l'aumento di altezza è di 5,08 cm fino a rottura.

Compressione parallela alla fibra.—Dimensioni della provetta, 5,08 × 5,08 × 20,32 cm. Carico finale, spostamento della macchina 0,061 cm al minuto.

Compressione perpendicolare alla fibra.—Dimensioni della provetta 5,08 × 5,08 × 15,24 cm. Il carico è applicato lateralmente a mezzo di una piastra di acciaio di 5,08 cm di larghezza, e questa è disposta nel mezzo del pezzo ad angolo retto rispetto alla lunghezza, per modo che ⅓ della superficie viene sottoposta a pressione. Lo spostamento della macchina deve essere di 0,061 cm al minuto.

Taglio nel senso della fibra.—Dimensioni della provetta 5,08 × 5,08 × 6,35 cm. Adattato ad una estremità in maniera da permettere il taglio sopra un'area di 5,08 × 5,08 cm. Spostamento della macchina 0,038 cm al minuto.

Trazione perpendicolare al senso della fibra.—Dimensioni come sopra. Forato in croce ad ogni estremità per fare agire lo sforzo sopra una superficie di 5,08 × 2,54 cm. Spostamento della macchina 0,635 cm al minuto.

Durezza.—Dimensioni della provetta, 5,08 × 5,08 × 15,24 cm. Carico necessario per far penetrare fino a metà spessore una sfera di acciaio avente una sezione massima di 1 cm.^{2} Spostamento della macchina 0,635 cm al minuto.

Sfaldatura parallela alla fibra.—Dimensioni delle provette 5,08 × 5,08 × 9,525. Forato a croce ad una estremità per sollecitare la provetta allo scorrimento per una larghezza di 5,08 cm e una lunghezza di 7,62 cm. Spostamento della macchina 0,635 cm al minuto.

HÖLZER DER PHILIPPINEN

The Bureau of Forestry and the Bureau of Science of the Philippine Islands

Einleitung

Dichte und Festigkeit von fünf Hölzern des Handels sind bestimmt worden. Die angewendeten Prüfungsmethoden und der Vorgang bei der Darstellung der Ergebnisse sind dieselben, welche von U. S. Forest Products Laboratory angewandt werden und schon oben verzeichnet sind. Es sind daher die Ergebnisse am Ende der Tafel 1 (unten) angegeben.

CANADISCHE HÖLZER

Eine Anzahl der in der Liste Tabelle 1 unten vorhandenen Arten sind ebenso vom Canadian Forest Products Laboratory untersucht worden, indem Proben von in Canada gewachsenen Bäumen, verwendet wurden. Soweit man ein abschliessendes Urteil abgeben kann, sind diese Hölzer im wesentlichen von gleicher Eigenschaft wie diejenigen, die in den Vereinigten Staaten gewachsen sind.

LEGNI DELLE FILIPPINE

The Bureau of Forestry and the Bureau of Science of the Philippine Islands

Introduzione

Sono state determinate densità e tenacità di cinque legni del commercio. I metodi di saggio adoperati e la rappresentazione dei risultati sono gli stessi impiegati dall' U. S. Forest Products Laboratory (*v.* sopra). I risultati sono stati perciò incorporati nella Tabella 1 e riportati in fondo.

LEGNI DEL CANADÀ

Un certo numero delle specie elencate nella Tabella 1 in basso è stato esaminato dal Canadian Forest Products Laboratory, il quale ha eseguito i saggi su campioni di alberi cresciuti nel Canadà. Questi legni hanno dimostrato di possedere proprietà eguali a quelle delle stesse specie crescente negli Stati Uniti.

TABLE 1.—STRENGTH AND RELATED PROPER-

Index No.	Botanical name: Family	Botanical name: Genus and species	Common name	Place of growth of material tested*	Seasoning condition	Density based on weight when oven-dry and volume: When oven-dry D_o	Density based on weight when oven-dry and volume: When green (D_g)	Density based on weight when oven-dry and volume: When air-dry (D_d)	Moisture content
						g/cm³			% of oven dry-weight

I. Equations expressing strength proper-

1	2	3	4	5	6	7	8	9	10
Green									
Green to oven-dry									
Air-dry									

II. Values as determined by tests—strength and shrink-

1	*Aceraceae*	*Acer macrophyllum*	Maple, bigleaf	Washington	Green	0.513	0.440		72
					Air-dry			0.483	12
2		*Acer nigrum*	Maple, black	Indiana	Green	0.620	0.520		65
					Air-dry			0.568	12
3		*Acer pennsylvanicum*	Maple, striped	Vermont	Green		0.438		35
					Air-dry			0.464	12
4		*Acer rubrum*	Maple, red	Wisconsin, Pennsylvania, New Hampshire	Green	0.546	0.488		63
					Air-dry			0.538	12
5		*Acer saccharinum*	Maple, silver	Wisconsin	Green	0.506	0.439		66
					Air-dry			0.470	12
6		*Acer saccharum*	Maple, sugar	Ind., Pa., Vt., Wis.	Green	0.676	0.568		57
					Air-dry			0.630	12
7	*Anacardiaceae*	*Rhus hirta*	Sumach, staghorn	Wisconsin	Green		0.449		45
					Air-dry			0.473	12
8		*Rhus metopium*	Poisonwood	Florida	Green	0.553	0.511		71
					Air-dry			0.533	12
9	*Aquifoliaceae*	*Ilex opaca*	Holly	Tennessee	Green	0.606	0.503		82
					Air-dry			0.569	12
10	*Betulaceae*	*Alnus rubra*	Alder, red	Washington	Green	0.434	0.368		98
					Air-dry			0.407	12
11		*Betula alaskana*	Birch, Alaska	Alaska	Green	0.594	0.488		58
					Air-dry				
12		*Betula lenta*	Birch, sweet	Pennsylvania New Hampshire	Green	0.714	0.601		53
					Air-dry			0.654	12
13		*Betula lutea*	Birch, yellow	Wis., Pa.	Green	0.668	0.550		68
					Air-dry			0.617	12
14		*Betula papyrifera*	Birch, paper	Wis., N. H.	Green	0.600	0.484		65
					Air-dry			0.552	12
15		*Betula populifolia*	Birch, gray	New Hampshire	Green	0.552	0.448		63
					Air-dry			0.506	12
16		*Carpinus caroliniana*	Beech, blue	Massachusetts	Green	0.717	0.575		48
					Air-dry			0.694	12
17		*Ostrya virginiana*	Hornbeam	Wisconsin	Green	0.762	0.632		52
					Air-dry			0.708	12
18	*Burseraceae*	*Bursera simaruba*	Gumbo, limbo	Florida	Green	0.320	0.305		99
					Air-dry			0.307	12
19	*Caprifoliaceae*	*Sambucus glauca*	Elderberry, blue	Oregon	Green	0.570	0.464		124
					Air-dry			0.518	12
20	*Combretaceae*	*Conocarpus erecta*	Buttonwood, Florida	Florida	Green	0.851	0.694		47
					Air-dry			0.709	12

*All material tested was grown in the United States. The State or States in which grown are listed in column 5.

TIES OF CERTAIN NORTH AMERICAN WOODS

Shrinkage from green to oven-dry condition			Static bending						Impact bending 22.7 kg hammer				Compression parallel to grain			Compression perpendicular to grain	Shear		Tension perpendicular to grain		Hardness: load to embed a steel ball of 1 sq. cm maximum cross section to one-half its diameter			Cleavage	
In volume	Radial	Tangential	Fiber stress at elastic limit	Modulus of rupture	Modulus of elasticity	Work to elastic limit	Work to maximum load	Total work	Fiber stress at elastic limit	Modulus of elasticity	Work to elastic limit	Height of drop causing complete failure	Fiber stress at elastic limit	Maximum crushing strength	Modulus of elasticity	Compression perpendicular to grain	Radial	Tangential	Radial	Tangential	End	Radial	Tangential	Radial	Tangential
% of dimension when green			kg/mm²			kg-mm/mm³			kg/mm²		kg-mm/mm³	m	kg/mm²			kg/mm²	kg/mm²		kg/mm²		kg			kg/mm of width	

ties and shrinkage in terms of density

11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
...	...	...	$F = 7.17D_g^{1.25}$																						
...	...	...	$F = 11.74d^{1.25}$	$F = 12.4D_g^{1.25}$	$F = 1660D_g^{1.00}$	$F = 0.00172D_g^{1.50}$	$F = 0.0250D_g^{1.75}$	$F = 0.0724D_g^{2.00}$	$F = 16.7D_g^{1.25}$	$F = 2070D_g^{1.00}$	$F = 0.00745D_g^{1.50}$	$F = 2.90D_g^{1.75}$	$F = 3.69D_g^{1.00}$	$F = 4.73D_g^{1.00}$	$F = 2050D_g^{1.00}$	$F = 2.11D_g^{2.25}$	$F = 1.73D_g^{1.25}$	$F = 1.85D_g^{1.25}$	$F = 1.27D_g^{2.00}$	$F = 1.62D_g^{2.00}$	$F = 1700D_g^{2.25}$	$F = 1530D_g^{2.25}$	$F = 1570D_g^{2.25}$	$F = 19.3D_g^{2.00}$	$F = 22.5D_g^{2.00}$
...	...	$S = 16.3D_g^{1.00}$	$F = 18.1d^{1.25}$	$F = 1969d^{1.00}$	$F = 0.00389d^{1.50}$	$F = 0.0228d^{1.75}$	$F = 0.0511d^{2.00}$	$F = 21.9d^{1.25}$	$F = 2380d^{1.00}$	$F = 0.0112d^{1.50}$	$F = 2.40d^{1.75}$	$F = 6.15d^{1.00}$	$F = 8.58d^{1.00}$	$F = 2380d^{1.00}$	$F = 3.26d^{2.25}$	$F = 2.22d^{1.25}$	$F = 2.40d^{1.25}$	$F = 1.31d^{2.00}$	$F = 1.60d^{2.00}$	$F = 2180d^{2.25}$	$F = 1690d^{2.25}$	$F = 1730d^{2.25}$	$F = 20.4d^{2.00}$	$F = 22.9d^{2.00}$
...	...	$S = 9.10D_g^{1.00}$																							
...	...	$S = 26.5D_g^{1.00}$																							

age values expressed in percentage of equation values

99	92	99	119	116	105	144	102	76	100	114	90	85	103	109	97	118	120	123	143	154	129	118	114	134	150
			99	104	108	91	87	68		98		107	122	103	87	104	123	145	101	120	147	120	115	125	158
101	102	109	90	101	108	77	112	117	96	99	95	132	104	93	88	107	97	103	118	136	109	112	101	128	140
			101	105	102	103	104	106	88	95	83	112	90	97	92	97	108	118	65	128	128	115	110	109	105
105			99	115	104	97	130	67	103	141	75	134	79	99	109	106	123	130			86	95			
			80	109	103	62	135	117	95	88	102	108		97		97		108			113	104			
101	89	102	92	107	120	78	113	97	101	103	101	97	95	100	123	85	101	107	126	119	105	104	100	100	106
			111	112	109	129	115	128	106	108	108	99	98	99	92	107	119	128	107	160	120	101	101	147	135
103	75	100	85	92	91	86	131	112	80	79	84	107	84	84	83	97	111	120	140	144	115	111	110	133	135
			98	90	87	111	95	90	103	84	137	99	108	93	70	110	114	127	83	131	133	99	106	122	131
99	92	99	101	108	115	99	100	109	104	106	104	95	105	105	102	95	106	116	110	123	102	102	98	110	119
			101	108	104	102	114	95	119	121	117	93	102	103	94	108	125	135	120	102	111	109	112	121	150
			80	90	76	92	123	204						89		97					109	107	103		
			123	102	91	167	97	119						106		121					100	105	91		
85	89	86	71	67	34	153	50	27	78	76	85	43	39	63	96	136	73	91	68	64	49	43	36	67	53
			71	91	86	59	59	31						74		72									
121	98	116	77	87	75	83	101	127	88	71	116	148	74	78	58	95	96	113	102	128	108	108	109	105	136
			75	81	70	83	89	64	82	72	101	93	71	83	60	89	94	118	123	85	107	95	100	99	
129	129	122	127	129	134	130	129	101	117	129	108	110	136	119	135	99	104	107	148	136	141	119	125	128	143
			130	119	120	133	125	74	115	115	117	102	130	120	143	90	97	109	102	140	156	117	125	130	136
128			90	98	117	72	113	136	101	103	103	113	77	92	96	73	84	92	48	33	74	85	80	67	59
98	118	87	88	100	116	83	107	116	83	114	64	102	85	92	127	62	90	94	58	59	90	87	90	71	69
			103	111	118	95	117	76	137	135	126	105	106	107	106	76	122	116	112	98	106	105	98	119	115
115	148	100	94	103	119	81	133	128	103	106	105	100	95	93	106	58	92	93	80	74	84	85	82	89	82
			118	120	122	120	141	123	115	115	114	136	123	112	98	76	92	102	102	106	90	98	94	77	116
126	143	109	72	89	102	55	162	180	84	94	74	153	66	73	83	58	80	82	67	65	64	81	86	79	73
			89	102	103	83	139	157	84	96	74	115	81	87	96	63	80	78			72	95	94	149	142
124	127		49	76	38	64	159	182	85	87	82	211	42	62	33	61					71	75	96		
			76	89	80	73	110	162	78	98	61	122	69	79	88	95					66	100	90		
125			62	77	73	58	141	177	85	85	86	245	46	69	62	85	98	85	76	32	83	95	95	73	59
			36	74	55	24	213	217	52	61	46		51	66	48	95	112	116	116		76	108	105	125	102
111	144	92	78	86	77	84	83	96	79	98	65	143	78	84	73	69	96	95	63	48	87	98	94	77	66
			89	87	86	95	80	85	70	80	62	94	93	94	70	74	93	78			103	111	110		
106	82	72	84	82	77	110	79	42	93	70	128	92	49	73	56	139	103	100	187	210	111	96	95	166	140
			88	81	86	92	72	45	88	98	86	73	67	85	95	177	110	105	204	170	111	106	101	169	172
126	105	118	86	97	82	94	95	156	87	92	85	128	100	97	109	98	116	107	144	113	114	119	117	151	104
			79	83	71	80	98		77	70	87	108	76	82	81	73					79	94	102		
79	86	75	70	66	73	71	33	33	93	79	110	66	84	88	118	86	75	77	44	51	66	74	74	68	62
			62	60	79	51	34							90		76									

1	2	3	4	5	6	7	8	9	10
21	*Cornaceae*	*Cornus florida*	Dogwood (flowering)	Tennessee	Green	0.796	0.638		62
					Air-dry			0.735	12
22		*Cornus nuttallii*	Dogwood, Pacific	Oregon	Green	0.701	0.578		52
					Air-dry			0.644	12
23		*Nyssa aquatica*	Gum, tupelo	Louisiana, Missouri	Green	0.524	0.455		97
					Air-dry			0.496	12
24		*Nyssa sylvatica*	Gum, black	Tennessee	Green	0.552	0.462		55
					Air-dry			0.507	12
25	*Ebenaceae*	*Diospyros virginiana*	Persimmon	Missouri	Green	0.776	0.639		59
					Air-dry			0.748	12
26	*Ericacae*	*Arbutus menziesii*	Madroña	Oregon, California	Green	0.694	0.575		69
					Air-dry			0.653	12
27		*Kalmia latifolia*	Laurel, mountain	Tennessee	Green	0.744	0.616		62
					Air-dry			0.684	12
28		*Oxydendrum arboreum*	Sourwood	Tennessee	Green	0.593	0.504		69
					Air-dry			0.550	12
29		*Rhododendron maximum*	Rhododendron, great	Tennessee	Green	0.601	0.501		99
					Air-dry			0.576	12
30	*Fagaceae*	*Castanea dentata*	Chestnut	Tennessee, Maryland	Green	0.454	0.396		122
					Air-dry			0.433	12
31		*Castanopsis chrysophylla*	Chinquapin, golden	Oregon	Green	0.483	0.417		134
					Air-dry			0.459	12
32		*Fagus grandifolia*	Beech	Ind., Pa.	Green	0.655	0.544		62
					Air-dry			0.624	12
33		*Quercus alba*	Oak, white	La., Ark., Ind.	Green	0.710	0.595		68
					Air-dry			0.683	12
34		*Quercus bicolor*	Oak, swamp white	Indiana	Green	0.792	0.637		74
					Air-dry			0.720	12
35		*Quercus borealis*	Oak, red	La., Ark., Ind., Tenn., N. H.	Green	0.657	0.564		80
					Air-dry			0.628	12
36		*Quercus californica*	Oak, California black	Oregon, California	Green	0.578	0.510		106
					Air-dry			0.571	12
37		*Quercus chrysolepis*	Oak, canyon live	California	Green	0.838	0.702		62
					Air-dry			0.778	12
38		*Quercus coccinea*	Oak, scarlet	Massachusetts	Green	0.709	0.603		65
					Air-dry				
39		*Quercus gambelii*	Oak, Gambel	Arizona	Green	0.701	0.617		61
					Air-dry			0.735	12
40		*Quercus garryana*	Oak, Oregon white	Oregon	Green	0.748	0.644		72
					Air-dry			0.724	12
41		*Quercus laurifolia*	Oak, laurel	Louisiana	Green	0.703	0.564		84
					Air-dry			0.632	12
42		*Quercus macrocarpa*	Oak, bur	Wisconsin	Green	0.671	0.583		70
					Air-dry			0.644	12
43		*Quercus montana*	Oak, chestnut	Tennessee	Green	0.674	0.573		72
					Air-dry			0.658	12
44		*Quercus nigra*	Oak, water	Louisiana	Green	0.685	0.556		81
					Air-dry			0.633	12
45		*Quercus rubra pagodaefolia*	Oak, swamp red	Louisiana	Green	0.708	0.607		78
					Air-dry			0.680	12
46		*Quercus palustris*	Oak, pin	Massachusetts	Green	0.677	0.577		75
					Air-dry				
47		*Quercus phellos*	Oak, willow	Louisiana	Green	0.688	0.556		94
					Air-dry			0.696	12
48		*Quercus prinus*	Oak, swamp chestnut	Louisiana	Green	0.756	0.595		76
					Air-dry			0.674	12
49		*Quercus rubra*	Oak, southern red	Louisiana	Green	0.624	0.521		90
					Air-dry			0.588	12
50		*Quercus stellata*	Oak, post	Arkansas, Louisiana	Green	0.738	0.596		69
					Air-dry			0.675	12
51		*Quercus velutina*	Oak, black	Arkansas, Wisconsin	Green	0.669	0.564		78
					Air-dry			0.610	12
52		*Quercus virginiana*	Oak, live	Florida	Green	0.977	0.810		50
					Air-dry			0.888	12
53	*Hamamelidaceae*	*Hamamelis virginiana*	Witch-hazel	Tennessee	Green	0.714	0.558		70
					Air-dry			0.614	12
54		*Liquidambar styraciflua*	Gum, red	Missouri	Green	0.530	0.441		81
					Air-dry			0.487	12
55	*Hippocastanaceae*	*Aesculus octandra*	Buckeye, yellow	Tennessee	Green	0.383	0.326		141
					Air-dry			0.363	12
56	*Juglandaceae*	*Hicoria alba*	Hickory, mockernut	Pa., Miss.	Green		0.642		60
					Air-dry			0.725	12
57		*Hicoria aquatica*	Hickory, water	Mississippi	Green		0.606		80
					Air-dry			0.621	12
58		*Hicoria cordiformis*	Hickory, bitternut	Ohio	Green		0.604		66
					Air-dry			0.663	12
59		*Hicoria glabra*	Hickory, pignut	W. Va., Miss., Ohio, Pa.	Green		0.661		54
					Air-dry			0.754	12
60		*Hicoria laciniosa*	Hickory, bigleaf shagbark	Ohio, Miss.	Green		0.622		61
					Air-dry			0.692	12
61		*Hicoria myristicae formis*	Hickory, nutmeg	Mississippi	Green		0.556		74
					Air-dry			0.605	12

11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
117	122	109	82	87	78	90	130	127	52	44	65	111		84		95	104	106			104	115	112		
			82	87	75	94	103	99	71	66	77	79		89		85		103			103	119	114		
112	121	101	81	92	80	86	124	113	81	89	77	129	75	93	91	100	97	105	114	102	105	101	95	81	90
			78	71	82	74	72	107	58	76	45	76	77	99	91	99	90	96		123	108	101	98	71	95
103	103	103	110	111	97	132	92	94	101	105	100	104	115	110	102	117	119	132	147	165	127	120	123	117	160
			107	91	91	132	73	63	97	91	107	82	101	101	88	117	114	122	172	134	125	111	119	102	136
113	105	103	103	105	95	120	87	87	108	99	121	102	100	98	71	114	107	120	134	128	120	110	104	130	136
			104	88	84	133	62	85	111	96	126	74	80	92	77	118	93	100	97	92	121	104	96	93	120
108	129	104	96	99	91	109	80	78	89	94	83	78	90	97	81	102	97	106	82	99	91	101	104	82	88
			98	101	98	103	81	87	86	95	84	64	98	105	81	106	92	104	98	116	106	120	122	99	81
114	104	127	91	85	65	135	82	56	85	75	100	91	77	86	74	91	111	110	124	103	104	98	92	112	108
			76	70	68	87	30	37	56	68	52	49	74	90	66	95	83	107			106	107	102	105	87
88	100	87	104	88	64	172	81	73	79	61	100	65		103		110	120	119			112	114	112		
			84	71	64	114	61	52	75	66	84	83		73		94					106	115	112		
113	137	107	101	102	110	94	92	79	106	106	108	110	102	95	128	106	105	109	140	133	107	101	99	131	136
			107	96	100	112	96	100	117	101	135	114	95	95	168	92	109	89	85	76	110	98	96	112	95
122	137	106	107	92	74	160	114	125		69		76		103		140	114	117			127	124	116		
			82	88	70	99	99	93		65		52		95		111									
109	94	103	95	101	99	97	100	106	106	107	108	104	98	92	84	103	107	93	148	124	115	99	102	137	124
			106	97	102	119	87	93	100	95	104	89	100	104	93	111	99	90	123	114	99	96	96	116	113
119	121	109	123	118	103	165	123	113	110	102	121	126	87	107	125	117	115	122	149	121	140	139	113	113	116
			130	113	98	194	114	125	93	89	98	122	98	103	93	87	97	109			102	120	106	131	
112	96	119	94	99	96	101	102	90	94	91	98	103	89	89	82	80	97	105	116	130	100	95	94	105	130
			93	102	96	100	97	106	103	98	109	85	84	91	93	78	106	106	127	99	82	90	88	103	113
100	98	93	88	90	89	97	81	80	86	90	85	90	95	88	73	89	90	98	99	110	96	102	96	94	107
			79	95	93	73	89	76	88	92	84	76	72	89	82	67	98	106	56	105	75	88	84	61	96
104	95	102	92	98	106	85	89	89	98	109	89	96	103	101	80	87	86	93	104	103	89	99	87	97	105
			91	103	102	86	105	130	107	101	115	92	88	96	88	66	85	99	66	87	73	88	92	68	82
90	78	89	81	96	101	71	101	107	91	101	84	106	78	91	95	92	99	96	118	113	103	110	104	114	114
			91	99	103	85	101	126	101	97	106	103	80	89	96	78	100	98	92	102	94	101	95	80	88
90	78	80	77	81	61	116	80	62	79	77	87	84	70	81	57	136	104	103	123	136	111	117	111	104	122
			75	69	63	100	53	40	57	61	57	44	67	84	63	113	92	92	107	122	88	108	102	76	104
87	125	124	96	93	81	119	75	66	73	86	62	76	109	99	76	108	98	108	86	104	94	104	99	80	100
			78	70	75	87	46	43	58	66	51	60	94	99	77	87	95	99	106		95	119	112	89	87
86	84	98	83	111	103	71	102	119	94	111	80	115	90	100	93	108	106	102	99	89	98	109	110	99	97
76	73	71	57	61	33	104	74	72	62	46	83	16	33	71	28	109	103	116	104	89	96	110	112	81	85
			47	49	33	68	47	30	66	86	52	39		58		90	72			47	86	84	70	60	
78	71	85	78	76	52	120	83	76	75	66	87	92	74	82	56	123	105	117	96	121	103	114	104	79	104
			60	60	54	69	53	49	57	63	55	52	65	76	52	96	87	98	42	105	81	97	87	34	81
127	76	103	90	92	104	84	86	75	88	109	76	93	92	84	91	86	94	95	110	123	99	107	104	94	110
			82	88	95	74	82	112	84	107	69	93	85	92	113	81	99	111	91	99	72	92	89	72	73
82	83	93	69	80	64	82	77	87	82	70	98	99	75	84	50	94	102	106	116	114	104	109	109	106	108
			67	69	57	85	65	61	82	69	98	64	62	78	58	88	89	106	58	93	80	97	99	48	78
110	106	103	90	91	101	85	70	66	101	105	98	81	96	91	91	76	94	96	96	106	91	94	88	86	110
			92	88	86	102	72	66	101	113	92	89	83	86	97	58	70	84		135	68	80	76	47	95
111	82	102	112	105	118	113	87	99	102	123	86	95	109	100	108	96	102	101	115	138	105	112	109	110	134
			94	106	114	82	148	106	106	115	101	103	70	89	147	76	108	104	108	115	82	93	84	82	109
102	94	109	118	114	125	115	99	98	96	128	76	113	118	113	114	97	97	96	103	107	104	115	108	99	110
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95	81	101	77	94	97	67	103	122	100	114	90	110		94		102	101	102	110	122	93	116	101	115	124
128	98	106	89	87	98	87	69	67	81	101	66	86	85	80	86	95	96	99		119	103	108	106	113	110
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123	109	95	90	92	96	89	89	96	83	108	65	98	97	88	87	76	91	98	92	92	95	106	102	85	104
			71	88	94	56	74	60	99	113	90	86	73	89	93	72	114	102	69	79	65	82	79	47	76
118	96	102	93	88	93	101	70	56	86	99	78	80	80	86	89	98	92	74	98	75	106	107	111	99	80
			70	84	91	59	74	54	96	87	103	70	57	86	165	77	66	102	67	77	71	96	92	70	96
102	100	101	93	87	77	117	77	65	87	94	83	94	90	87	71	114	93	98	107	108	100	108	104	93	104
			74	84	80	74	81	118	92	87	96	96	66	80	88	93	93	94	64	97	68	95	82	65	90
95	88	105	91	95	88	120	94	88	97	88	108	95	94	91	86	106	102	94	140	129	97	114	110	122	126
			87	99	96	83	100	103	84	88	84	102	88	88	92	76	110	111	103	108	87	102	93	87	101
68	89	71	107	88	82	143	50	38	94	82	109	71	97	99	147	135	109	116	68	84	72	91	86	65	77
			61	83	79	48	72	72	79	77	83	43	72	82	131	99	94	94	58	65	85	88	96	45	62
127			101	97	84	127	152	176	108	83	143	97		90		77	89	92			101	106	107		
			102	112	85	126	155							83		92					120	128	123		
128	130	138	101	107	110	114	111	106	116	116	126	121	101	95	111	96	113	121	129	127	107	96	97	137	150
			119	114	109	142	123	92	135	117	158	119	100	98	99	95	118	121	148	169	101	95	92	114	150
138	117	147	105	111	127	91	108	86	111	119	105	112	95	93	104	87	97	114	136	153	119	107	101	132	155
			110	105	116	112	109	81	116	109	129	96	100	96	124	96	101	106	202	181	98	93	93	122	168
105	135	105	107	108	102	110	160	172	110	100	123	167	115	103	81	90	86	89		.					
			108	112	110	103	123	174	98	100	99	142		102		96	84	76							
			109	113	109	112	127	139	108	98	121	118	101	114	109	112	105	106							
			111	126	117	110	136	149		111		127	101	116	106	122		94							
			100	109	98	107	135	199	124	93	170	140	136	112	92	102	87	95							
			94	112	97	93	116	215	128	114	147	143		113		115	96								
102	120	107	101	111	106	102	183	191	119	94	154	161		108		96	89	92							
			97	112	108	92	154	201	116	108	127	127		103		102	96	94							
116	136	124	99	108	91	113	192	220	108	88	135	208	84	93	80	97	82	86							
			85	113	98	74	138	195	116	100	153	175		97		112	105	102							
			99	107	98	105	181	182	112	87	139	132	123	106	87	118	86	83							
			91	122	101	80	188							95		133	110								

1	2	3	4	5	6	7	8	9	10
62		*Hicoria ovata*	Hickory, shagbark	Miss., Ohio, W. Va., Pa.	Green		0.637		60
					Air-dry			0.724	12
63		*Hicoria pecan*	Hickory, pecan	Missouri	Green	0.694	0.601		63
					Air-dry			0.666	12
64		*Juglans cinerea*	Butternut	Wisconsin, Tennessee	Green	0.404	0.359		104
					Air-dry			0.383	12
65		*Juglans nigra*	Walnut, black	Kentucky	Green	0.562	0.513		81
					Air-dry			0.552	12
66		*Juglans rupestris*	Walnut, Mexican	Arizona	Green	0.613	0.532		67
					Air-dry			0.570	12
67	*Lauraceae*	*Sassafras sassafras*	Sassafras	Tennessee	Green	0.473	0.424		67
					Air-dry			0.451	12
68		*Umbellularia californica*	Myrtle, Oregon	Oregon	Green	0.589	0.512		71
					Air-dry			0.556	12
69	*Leguminosae*	*Gleditsia triacanthos*	Locust, honey	Indiana, Missouri	Green	0.666	0.596		63
					Air-dry			0.636	12
70		*Robinia pseudacacia*	Locust, black	Tennessee	Green	0.708	0.659		41
					Air-dry			0.694	12
71	*Magnoliaceae*	*Liriodendron tulipifera*	Poplar, yellow	Tennessee, Kentucky	Green	0.427	0.376		64
					Air-dry			0.401	12
72		*Magnolia acuminata*	Magnolia, cucumber	Tennessee	Green	0.516	0.440		80
					Air-dry			0.480	12
73		*Magnolia fraseri*	Magnolia, Fraser's	Tennessee	Green	0.477	0.400		89
					Air-dry			0.446	12
74		*Magnolia grandiflora*	Magnolia, evergreen	Louisiana	Green	0.530	0.460		117
					Air-dry			0.502	12
75	*Moraceae*	*Toxylon pomiferum*	Orange, osage	Indiana	Green	0.838	0.761		31
					Air-dry				
76		*Ficus aurea*	Fig, golden	Florida	Green		0.438		88
					Air-dry			0.444	12
77	*Myrtaceae*	*Eucalyptus globulus*	Gum, blue	California	Green	0.796	0.625		79
					Air-dry			0.750	12
78		*Eugenia garberi*	Stopper, Garber's	Florida	Green	0.918	0.831		40
					Air-dry			0.877	12
79	*Oleaceae*	*Fraxinus americana*	Ash, white	Ark., N. Y., W. Va.	Green	0.638	0.542		42
					Air-dry			0.593	12
80		*Fraxinus biltmoreana*	Ash, Biltmore white	Tennessee	Green	0.584	0.507		42
					Air-dry			0.550	12
81		*Fraxinus pennsylvanica lanceolata*	Ash, green	Louisiana, Missouri	Green	0.610	0.526		48
					Air-dry			0.566	12
82		*Fraxinus nigra*	Ash, black	Wisconsin, Michigan	Green	0.526	0.457		84
					Air-dry			0.493	12
83		*Fraxinus oregona*	Ash, Oregon	Oregon	Green	0.575	0.497		48
					Air-dry			0.550	12
84		*Fraxinus profunda*	Ash, pumpkin	Missouri	Green	0.551	0.485		51
					Air-dry			0.520	12
85		*Fraxinus quadrangulata*	Ash, blue	Kentucky	Green	0.603	0.532		39
					Air-dry			0.568	12
86	*Palmaceae*	*Sabal palmetto*	Palmetto, cabbage	Florida	Green	0.453	0.372		133
					Air-dry			0.387	12
87	*Pinaceae*	*Abies amabilis*	Fir, silver	Washington	Green	0.415	0.351		66
					Air-dry			0.385	12
88		*Abies balsamea*	Fir, balsam	Wisconsin	Green	0.414	0.335		117
					Air-dry			0.366	12
89		*Abies concolor*	Fir, white	California, New Mexico	Green	0.397	0.348		115
					Air-dry			0.371	12
90		*Abies grandis*	Fir, lowland white	Montana, Oregon	Green	0.419	0.370		94
					Air-dry			0.398	12
91		*Abies lasiocarpa*	Fir, alpine	Colorado	Green	0.321	0.306		47
					Air-dry			0.327	12
92		*Abies magnifica*	Fir, red	California	Green	0.421	0.372		108
					Air-dry			0.388	12
93		*Abies nobilis*	Fir, noble	Oregon	Green	0.403	0.351		36
					Air-dry			0.375	12
94		*Chamaecyparis lawsoniana*	Cedar, Port Orford	Oregon	Green	0.440	0.399		43
					Air-dry			0.416	12
95		*Chamaecyparis nootkatensis*	Cedar, Alaska	Oregon	Green	0.439	0.399		40
					Air-dry			0.422	12
96		*Chamaecyparis thyoides*	Cedar, southern white	New Hampshire, North Carolina	Green	0.352	0.310		35
					Air-dry			0.323	12
97		*Juniperus pachyphloea*	Juniper, alligator	Arizona	Green	0.545	0.477		40
					Air-dry			0.511	12
98		*Juniperus virginiana*	Cedar, eastern red	Vermont	Green	0.492	0.442		35
					Air-dry			0.471	12
99		*Larix laricina*	Tamarack	Wisconsin	Green	0.558	0.491		52
					Air-dry			0.528	12
100		*Larix occidentalis*	Larch, western	Montana, Washington	Green	0.587	0.482		58
					Air-dry			0.520	12
101		*Libocedrus decurrens*	Cedar, incense	Oregon, California	Green	0.365	0.346		108
					Air-dry			0.368	12

11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
99	121	101	101	110	104	103	146	181	106	96	119	143	102	107	93	96	119	92							
			97	119	107	91	140	206	93	98	92	124		106		98	100	94							
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83	111	85	120	123	117	129	132	123	115	117	115	104	133	124	117	90	111	108	106	105	115	120	116	123	110
			126	121	109	173	92	93	111	102	129	101	124	116	110	108	84	94	152	72	84	105	100	103	72
76	92	53	73	99	73	78	108	159	91	78	110	122		84		105								86	
			102	113	94	114	93	58	72	80	65	57		99											
91	103	90	102	99	91	119	90	122	104	94	121	145	108	95	70	106	118	101	161	125	113	110	101	157	131
			102	96	89	120	110	181	92	86	110	138	84	89	67	140	109	98	165	121	82	108	98	127	119
88	60	96	87	86	59	138	153	160	80	64	105	161	73	88	55	121	113	117	132	153	122	132	132	109	166
			69	65	61	83	68	50	72	68	81	89	77	86	54	116	119	124	142	133	123	124	133	113	110
68	78	67	104	110	92	125	88	94	94	97	95	102	105	110	84	152	128	121	123	130	124	140	121	118	116
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56	73	64	144	131	119	182	90	100	129	122	138	80	181	153	100	122	132	101	94	81	113	113	123	72	85
			122	119	106	148	108	149	107	109	105	114	125	121	157	112	116	130	72	57	75	99	108	55	57
123	118	114	112	103	122	111	85	61	122	117	132	88	100	95	138	100	93	105	136	169	93	92	88	121	146
			116	113	134	106	105	81	137	134	139	105	100	111	157	101	103	109	138	174	93	95	95	134	155
116	130	122	115	117	150	93	118	108	108	129	94	111	119	106	129	87	102	115	114	106	101	98	93	114	116
			125	123	135	112	138	127	121	133	111	134	115	111	137	81	97	112	126	161	106	97	98	107	99
123	122	115	103	109	126	89	115	99	113	122	107	100	107	97	113	87	102	102	136	138	122	113	118	137	139
			114	109	113	119	128	113	124	124	123	116	104	102	131	85	94	105	163	173	108	104	102	133	141
101	129	88	93	101	101	88	167	167	98	103	97	184	91	87	97	110	104	111	126	151	121	126	121	115	159
			98	105	101	100	131	79	103	96	112	101	80	91	120	110	122	105	143	143	126	130	127	165	122
44			106	109	74	156	172	170	92	67	126	169	99	113	60	139					91	126	94		
			86	93	57	130	79	76						89		138					106	114	105		
			64	77	65	64	88	77						82											
135	133	150	134	114	135	138	89	93	107	131	89	80	148	124	126	98	99	119	68	89	101	118	108	74	83
			100	93	114	96	63	57	95	107	87	72	134	112	119	72	57	103			67	82	77		
60	83	67	96	107	99	107	83	67	102	81	13	67	90	110	94	124	92	87	69	61				15	
			89	72	82	113	42	67	36	44	30	14	67	87	78	87						104	82		
90	94	81	111	117	113	115	118	118	111	101	123	100	120	111	100	105	121	111	119	107	111	113	110	108	108
			112	117	107	121	122	118	108	100	120	103	114	104	94	102	130	112	149	102	122	116	114	123	87
93	91	83	126	123	111	149	106	102	117	111	129	86	133	116	101	135	120	107	110	95	118	115	116	119	109
			118	109	104	139	103	121	113	106	126	121	119	114	99	128	119	98	128	100	130	123	113	117	107
89	96	83	115	119	112	123	102	99	107	95	122	94	128	118	99	128	116	105	117	92	109	107	109	114	101
			109	113	105	117	113	96	108	104	112	89	103	103	100	127	130	115	124	88	124	121	109	116	112
126	119	104	67	90	96	56	134	124	81	78	76	113	60	75	78	84	94	88	156	85	92	90	86	147	84
			106	120	116	85	160	186	91	109	91	131	101	101	103	101	130	105	142	133	119	105	116	139	120
100	91	100	99	103	96	108	116	112	90	103	81	115	105	105	115	105	115	109	119	112	110	111	112	102	111
			89	105	88	96	127	111	91	103	82	98	87	92	87	130	119	120	130	105	116	116	123	130	100
93	84	80	108	106	91	132	93	77	91	84	103	97	111	103	78	168	123	112	138	103	120	117	108	131	126
			89	98	88	94	78	67	100	91	115	77	84	92	66	170	133	110	184	100	131	118	112	155	114
83	81	75	122	119	98	155	125	137	103	88	119	113	126	117	84	275	139	128	100	101	126	124	124	100	111
			99	110	88	115	120	147	120	108	135	120	111	102	72	149	122	129	78		129	126	120	105	116
253			64	73	55	82	64	96	72	48	112	73	58	69	33	58					83				
			59	60	51	72	73	125	65	58	76	90	25	47	74	32					53				
150	141	172	127	118	151	120	105	101	121	146	100	115	128	112	150	102	100	95	82	104	103	91	101	102	99
			123	122	142	110	155	160	121	120	128	133	131	120	140	93	133	93		86	113	98	100	99	124
121	93	120	114	108	122	111	90	67	113	118	110	95	118	106	129	82	96	93	81	72	91	97	103	102	94
			111	105	122	106	91	128	88	104	76	124	127	105	128	80	75	79	76	53	105	104	105		
102	100	123	140	120	125	168	90	89	132	135	133	120	120	105	119	134	111	110	115	121	109	103	107	118	120
			133	124	133	140	118	84	118	129	114	114	101	119	118	121	97	99	91	91	142	109	112	93	93
108	94	120	121	118	147	105	89	104	117	129	108	110	137	120	170	106	106	101	87	81	105	96	103	98	89
			112	115	147	92	119	207	123	128	120	150	137	115	152	110	92	89	47	69	112	96	115	140	62
111	89	142	101	110	119	95	98	76	97	109	88	62	105	100	99	148	102	109			108	86	96	127	113
			137	106	98	194	65	68	89	110	75	113	123	102	103	155	127	145			120	103	149	111	106
119	112	113	138	116	121	173	105	89	125	130	117	107		112		137	125	124	113	124	96	104	102	111	123
			136	137	143	138	151		124	136	114	126		112		154	112	98	105	119	190	121	116	98	109
134	141	143	131	121	152	122	105	124	133	138	132	105	127	115	167	119	106	110	83	98	94	87	90	94	110
			136	134	151	129	152	168	122	148	105	139	153	123	169	129	103	104	78	76	133	97	105	72	81
95	128	106	121	110	151	107	104	148	121	135	111	93	128	116	159	94	103	104	60	50	99	92	92	56	57
			138	133	148	135	132	198	130	146	116	137	160	129	144	122	96	102	108	117	111	110	105	98	113
74	53	77	109	110	102	126	134	144	114	113	118	118	114	107	91	109	98	105	87	74	110	92	97	79	73
			117	115	107	139	124	104	114	100	132	135	143	112	98	107	86	93	98	95	102	102	93		
102	100	102	106	116	103	121	127	136	108	102	118	121	103	114	105	141	120	115	97	86	152	121	119	115	104
			116	108	103	117	90	71	100	103	101	102	104	117	122	140	97	104	98	108	139	121	113	106	101
61	63	46	89	94	40	209	137	69	72	49	111	67	96	116	45	181	128	125			136	121	132		56
			75	60	45	138	64		42	44	43	40		66		168	75				123	142	140			
66	78	65	92	110	62	152	175	166	81	81	87	126	112	120	53	182	116	104	82	82	128	124	114	80	73
			57	86	66	57	100		69	56	87	88		102		133			177		101		124	73	115
105	82	92	100	99	107	100	70	120	79	87	72	85	117	105	111	80	87	78	54	49	53	56	53	64	52
			107	101	111	105	67	88	89	91	88	75	107	111	114	91	93	87	79	62	59	68	67	71	61
103	95	102	112	105	118	123	72	77	98	115	103	75	128	117	107	97	93	87	47	48	65	68	69	59	57
			104	103	116	117	78	109	109	121	118	105	151	118	103	100	95	94	54	56	99	93	82	55	45
83	103	100	144	132	103	192	114	64	116	126	111	96	151	135	111	167	127	120	126	107	167	124	125	123	107
			125	109	102	140	95	73	108	107	111	103	151	119	99	152	93	94	95	99	168	118	120		

1	2	3	4	5	9	7	8	9	10
102		*Picea engelmanni*	Spruce, Engelmann	Colorado	Green	0.347	0.312		100
					Air-dry			0.332	12
103		*Picea glauca*	Spruce, white	Wis., N. H.	Green	0.431	0.366		50
					Air-dry			0.391	12
104		*Picea mariana*	Spruce, black	New Hampshire	Green	0.428	0.376		38
					Air-dry			0.402	12
105		*Picea rubra*	Spruce, red	Tennessee, New Hampshire	Green	0.413	0.379		43
					Air-dry			0.406	12
106		*Picea sitchensis*	Spruce, Sitka	Wash., Oregon	Green	0.397	0.355		44
					Air-dry			0.384	12
107		*Pinus banksiana*	Pine, jack	Wisconsin	Green	0.461	0.394		105
					Air-dry			0.428	12
108		*Pinus caribaca*	Pine, slash	Florida	Green	0.756	0.638		40
					Air-dry			0.682	12
109		*Pinus clausa*	Pine, sand	Florida	Green	0.506	0.451		36
					Air-dry			0.481	12
110		*Pinus contorta*	Pine, lodgepole	Wyo., Mont., Colo.	Green	0.434	0.380		65
					Air-dry			0.410	12
111		*Pinus echinata*	Pine, shortleaf	Ark., La.	Green	0.584	0.494		64
					Air-dry			0.542	12
112		*Pinus edulis*	Piñon	Arizona	Green	0.567	0.502		63
					Air-dry			0.530	12
113		*Pinus flexilis*	Pine, limber	New Mexico	Green	0.420	0.374		68
					Air-dry			0.401	12
114		*Pinus jeffreyi*	Pine, Jeffrey	California	Green	0.425	0.371		101
					Air-dry			0.402	12
115		*Pinus lambertiana*	Pine, sugar	California	Green	0.378	0.348		137
					Air-dry			0.360	12
116		*Pinus monticola*	Pine, western white	Montana, Idaho	Green	0.418	0.363		54
					Air-dry			0.385	12
117		*Pinus palustris*	Pine, longleaf	La., Miss., Fla.	Green	0.638	0.551		47
					Air-dry			0.592	12
118		*Pinus ponderosa*	Pine, western yellow	Colo., Wash., Ariz., Cal., Mont.	Green	0.420	0.379		91
					Air-dry			0.402	12
119		*Pinus pungens*	Pine, mountain	Tennessee	Green	0.549	0.494		75
					Air-dry			0.523	12
120		*Pinus resinosa*	Pine, red	Wisconsin	Green	0.507	0.440		54
					Air-dry			0.479	12
121		*Pinus rigida*	Pine, pitch	Tennessee	Green	0.542	0.470		85
					Air-dry			0.505	12
122		*Pinus rigida serotina*	Pine, pond	Florida	Green	0.580	0.501		56
					Air-dry			0.539	12
123		*Pinus strobus*	Pine, eastern white	Wis., Minn., N. H.	Green	0.373	0.344		68
					Air-dry			0.362	12
124		*Pinus taeda*	Pine, loblolly	Florida	Green	0.593	0.504		72
					Air-dry			0.550	12
125		*Pseudotsuga taxifolia*	Douglas fir (coast type)	Lewis Co., Chehalis Co., Clark Co., Wash.; Lane Co., Clatsop Co., Wash. Co., Ore.; Humboldt Co., Cal.	Green	0.512	0.448		36
					Air-dry			0.482	12
126		*Pseudotsuga taxifolia*	Douglas fir (mountain type)	Johnson Co., Wyo.; Missoula Co., Mont.	Green	0.446	0.405		39
					Air-dry			0.426	12
127		*Sequoia sempervirens*	Redwood	California	Green	0.436	0.410		113
					Air-dry			0.427	12
128		*Taxodium distichum*	Cypress, southern	Louisiana, Missouri	Green	0.482	0.425		91
					Air-dry			0.458	12
129		*Thuja occidentalis*	Cedar, northern white	Wisconsin	Green	0.315	0.293		55
					Air-dry			0.310	12
130		*Thuja plicata*	Cedar, western red	Montana, Washington	Green	0.344	0.310		39
					Air-dry			0.330	12
131		*Tsuga canadensis*	Hemlock, eastern	Wis., Tenn., N. H.	Green	0.431	0.375		110
					Air-dry			0.398	12
132		*Tsuga heterophylla*	Hemlock, western	Washington, Oregon	Green	0.432	0.377		77
					Air-dry			0.406	12
133		*Tsuga mertensiana*	Hemlock, mountain	Montana	Green	0.480	0.418		70
					Air-dry			0.450	12
134	*Platanaceae*	*Platanus occidentalis*	Sycamore	Indiana, Tennessee	Green	0.539	0.456		83
					Air-dry			0.494	12
135	*Polygonaceae*	*Coccolobis laurifolia*	Plum, pigeon	Florida	Green	0.851	0.771		52
					Air-dry			0.786	12
136	*Rhamnaceae*	*Rhamnidium ferreum*	Ironwood, black	Florida	Green	1.077	1.045		32
					Air-dry			1.147	12
137		*Rhamnus purshiana*	Caseara	Oregon	Green	0.548	0.496		61
					Air-dry			0.516	12
138	*Rhizophoraceae*	*Rhizophora mangle*	Mangrove	Florida	Green	1.063	0.886		39
					Air-dry			0.964	12
139	*Rosaceae*	*Amelanchier canadensis*	Servieeberry	Tennessee	Green	0.791	0.656		48
					Air-dry			0.747	12
140		*Crataegus tomentosa*	Haw, pear	Wisconsin	Green		0.623		63
					Air-dry			0.680	12
141		*Prunus pennsylvanica*	Cherry, wild red	Tennessee	Green	0.425	0.361		46
					Air-dry			0.394	12

11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
125	121	129	103	101	113	102	106	62	105	108	101	94	105	95	109	133	100	100			93	95	99	113	113
			133	122	121	138	119	96	112	116	111	107	115	109	103	156	121	118			108	89	105	158	138
153	112	122	114	110	118	120	99	110	99	110	83	101	107	101	87	87	97	92	76	69	66	78	66	90	81
			116	114	130	117	116	114	100	113	89	111	115	108	138	89	95	92	119	103	107	95	119	100	104
113	121	110	96	103	120	80	115	139	97	130	72	114	81	102	150	53	93	84	36	35	104	103	92	77	64
			107	125	135	94	159	183	134	122	151	118	138	110	144	116	102	95	87		114	112	106	99	68
117	109	126	112	110	132	102	106	93	101	111	92	80	128	104	126	102	102	100	58	85	99	89	93	83	90
			125	122	134	121	125	98	116	119	115	129	139	119	135	95	100	103	107	97	101	96	102	83	90
121	134	128	117	113	147	102	106	141	130	130	136	130	113	108	164	106	109	106	76	89	118	100	103	89	92
			129	124	142	117	150	179	126	137	121	138	122	112	114	132	122	118	122	142	133	109	110	102	117
100	94	102	93	98	99	92	84	127	105	94	127	134	108	97	91	103		91	94	98	83	85	89	106	88
			89	91	103	82	73	75	104	106	107	164		107		124		96	105	103	95	111	104	88	94
75	100	79	97	96	104	113	52	66	96	98	98	70	101	110	115	65	83	70	54	43	51	60	60	51	43
			94	99	110	101	67	59	94	114	80	71	112	119	96	87	98	82	65	49	60	68	76		41
83	95	99	109	115	96	128	108	104	111	89	144	88	108	113	103	112	125	118	102	80	75	83	85	95	
			101	114	106	101	107	105	99	102	103	72	96	119	148	116	84	82	73	52	104	104	100	85	
114	128	108	99	104	120	86	86	82	100	111	92	96	105	102	131	92	93	88	80	69	77	84	88	101	81
			124	112	117	142	102	94	94	100	92	100	128	110	113	124	87	79	102	68	84	93	98	96	79
95	113	101	106	109	124	94	84	140	113	123	108	117	139	114	131	78	92	77	67	65	64	77	83	76	73
			111	111	126	102	87	86	105	124	92	113	127	119	132	100	96	84	80	50	67	81	86	82	55
74	100	63	60	64	55	70	72	88	81	63	110	62	61	76	122	75	86	85	93	85	65	81	83		68
			75	68	77	89	43		60	77	48	39		101		143	99		66		81	96	96		
83	71	84	128	101	90	193	81	61	102	97	108	88	99	96	109	97	102	96	94	92	73	86	82	99	108
			125	112	104	158	103	78	114	109	127	96		111		123	81	74	73	56	85	94	88	148	120
100	130	110	106	97	112	109	75	108	103	103	108	104	104	95	104	110	94	94	90	92	80	91	95	93	99
			138	116	110	180	100	85	125	123	129	141	123	116	100	137	120	116	121	109	102	100	106	129	126
86	91	98	123	107	114	140	96		116	113	120	96	127	108	101	126	102	97	111	108	91	94	100	128	127
			122	112	118	129	101	87	123	118	130	111	145	108	124	126	125	110	126	129	111	104	101	120	123
123	124	125	116	104	136	106	83	139	114	121	113	98	124	108	150	96	90	87	96	96	81	88	90	106	98
			123	123	140	115	146	138	126	137	118	132	145	121	162	101	105	85	101	82	79	86	86	87	88
84	106	83	110	104	125	100	64	98	95	115	79	85	132	118	117	76	96	82	50	44	56	66	67	57	50
			116	116	124	112	83	89	95	111	82	86	135	124	114	99	99	82	59	50	68	79	78	61	47
95	112	102	101	95	108	104	78	92	95	92	102	94	104	93	103	106	91	90	99	97	72	82	81	99	99
			118	112	112	133	101	97	98	103	98	88	120	109	102	125	113	111	120	124	91	94	93	110	112
83	76	84	106	103	109	111	78	110	103	108	103	87	114	106	97	91	96	86	75	56	62	72	70	76	65
			108	104	106	114	84	86	104	105	107	95	90	110	118	115	87	78			66	80	73	62	58
98	115	100	102	101	133	83	68	139	87	110	70	103	106	104	128	76	92	78	51	46	60	65	62	77	63
			140	122	134	153	112	98	126	125	126	95	139	124	136	94	112	88	95	111	74	77	85	82	68
94	112	96	91	97	101	96	89	139	98	92	100	95	85	96	86	93	100	92	93	66	67	76	78	89	81
			90	96	97	93	88	95	108	99	137	98	84	99	96	94	99	97	84	104	68	80	77	92	82
84	111	87	105	100	108	88	71	98	93	103	84	97	113	108	95	86	95	80	55	54	58	71	70	66	60
			110	99	116	106	78	62	93	104	81	88	129	119	117	102	104	85	67	55	67	85	76	74	64
90	74	107	114	107	125	110	95	93	106	117	104	95	116	108	135	106	99	97	98	100	90	97	102	105	102
			128	123	126	135	124	116	108	116	106	116	122	111	127	119	100	90	109	113	103	105	106	105	102
94	120	90	107	101	120	102	75	99	93	108	82	93	108	108	102	86	92	76	58	52	51	61	63	66	60
			115	106	125	116	76	94	89	106	76	83	124	122	110	101	109	77	64	47	64	75	70	68	53
99	122	107	127	117	146	116	78	90	112	131	100	87	145	129	162	101	103	97	59	59	82	84	85	67	69
			123	116	143	110	96	137	103	129	86	114	163	129	144	103	93	81	64	66	84	92	95	64	72
98	97	94	110	111	123	103	93	76	117	128	113	87	117	110	126	115	108	104	108	98	92	89	90	93	78
			109	108	117	105	89	106	113	122	109	122	125	118	116	123	101	84	85	89	105	112	116	73	72
58	73	63	163	137	120	255	99		125	122	132	89		158		135	104	104	78	49	124	99	100	88	68
			136	121	114	171	103		103	115	96	87		126		149	103	91	75	57	125	97	91	76	69
93	100	87	119	109	118	136	83	100	107	109	110	98	137	125	121	114	97	89	94	72	82	76	80	90	76
			114	109	112	126	98	113	88	105	78	100	130	114	112	113	86	78	64	61	80	79	79	64	67
90	78	98	117	111	93	158	136	107	103	90	121	113	91	100	88	153	116	108	156	118	137	106	105	157	129
			126	109	93	182	114	79	98	98	100	99	100	105	98	115	114	121	122	124	131	115	126	126	132
99	89	100	137	128	131	152	109	91	128	128	86	116	152	136	125	147	127	118	122	99	161	105	107	133	103
			122	119	126	126	130	122	114	126	107	115	153	128	131	150	107	105	82	87	163	108	113	87	99
98	88	108	129	124	122	143	97	117	110	113	112	100	126	124	113	140	119	110	82	84	122	113	108	101	87
			116	106	108	131	99	102	113	106	125	112	115	115	117	144	97	98	54	50	130	105	98	65	62
117	132	127	116	116	136	105	95	92	115	127	104	97	115	115	159	103	107	108	86	96	128	106	115	98	103
			120	111	127	121	97	131	116	114	117	122	147	118	112	102	99	99	72	70	133	104	113	91	104
97	116	104	101	101	95	118	120	176	109	97	124	145	117	102	98	95	106	100	93	106	110	97	96	95	99
			102	104	90	127	114	90	119	104	140	154	98	111	97	134	94	99	61	98	136	100	105	68	71
117	121	101	85	97	99	80	83	71	99	99	100	92	100	95	90	88	98	110	133	158	109	104	104	119	150
			93	95	103	89	92	71	81	97	70	96	87	91	99	92	96	116	120	157	94	97	105	103	160
77	63	62	68	77	71	71	51	40	93	91	94	56	103	95	141	90	73	90	51	84	83	87	94	57	57
			61	67	59	69	51						77	73	83	110						81	103		
42	65	47	93	88	89	101	33	64	74	82	67	285	103	107	72	105		93	51						40
			38	61	93	17	18	36	46	75	28	129		71	93	48		63							17
58	71	57	78	86	54	122	128	209	88	79	97	155	72	98	68	109	120	98	117	89	88	108	100	90	89
			84	78	68	108	74		75	72	157	41	82	99	64	132	121	109			120	123	127		
67	67		110	100	110	113	50	50	100	109	92	56	112	108	108	108	73	91	89		71	91	81	68	
			88	89	110	73	58	96				36	66	92	91	77	93	92				80	79		
107	112	101	93	92	105	84	94	90	87	108	72	115	92	92	79	68	80	87	87	79	87	95	93	75	84
			97	96	90	101	97	121	99	104	96	104	108	98	64	76	69	73			86	96	90		
			68	78	65	74	146	109						74		95	95	96			94	105	98		
			75	94	67	84	143	97						83		83	90				100	98	101		
133	85	175	100	102	122	89	103	126	98	110	91	115	96	89	102	88	90	99	114	108	116	111	112	115	113
			111	108	115	116	132	194	104	110	102	171	116	99	99	94	101	105	101	101	128	113	110	120	127

1	2	3	4	5	6	7	8	9	10
142		*Prunus serotina*	Cherry, black	Pennsylvania	Green	0.534	0.471		55
					Air-dry			0.506	12
143		*Pyrus malus*	Applewood or wild apple	Virginia	Green	0.745	0.606		47
					Air-dry			0.668	12
144	*Salicaceae*	*Populus balsamifera*	Poplar, balsam	Vermont	Green	0.331	0.301		121
					Air-dry			0.316	12
145		*Populus deltoides*	Cottonwood, eastern	Missouri	Green	0.433	0.372		111
					Air-dry			0.408	12
146		*Populus grandidentata*	Aspen, large tooth	Wisconsin, Vermont	Green	0.412	0.348		99
					Air-dry			0.386	12
147		*Populus tremuloides*	Aspen	Wisconsin, New Mexico	Green	0.401	0.351		94
					Air-dry			0.380	12
148		*Populus trichocarpa*	Cottonwood, black	Washington	Green	0.368	0.315		132
					Air-dry			0.348	12
149		*Salix lasiandra*	Willow, western black	Oregon	Green	0.473	0.394		105
					Air-dry			0.441	12
150		*Salix nigra*	Willow, black	Wisconsin, Missouri	Green	0.408	0.338		139
					Air-dry			0.372	12
151	*Sapindaceae*	*Exothea paniculata*	Inkwood	Florida	Green	0.917	0.731		56
					Air-dry			0.800	12
152	*Sapotaceae*	*Dipholis salicifolia*	Bustie	Florida	Green		0.861		44
					Air-dry			0.885	12
153		*Sideroxylon mastichodendron*	Mastie	Florida	Green	1.034	0.886		39
					Air-dry			0.932	12
154	*Simaroubaceae*	*Simarouba glauca*	Paradise-tree	Florida	Green	0.359	0.332		81
					Air-dry			0.345	12
155	*Styracaceae*	*Mohrodendron carolinum*	Silverbell-tree	Tennessee	Green	0.475	0.418		70
					Air-dry			0.453	12
156	*Taxaceae*	*Taxus brevifolia*	Yew, Pacific	Washington	Green	0.673	0.601		44
					Air-dry			0.626	12
157	*Tiliaceae*	*Tilia glabra*	Basswood	Wisconsin, Pennsylvania	Green	0.398	0.325		103
					Air-dry			0.368	12
158	*Ulmaceae*	*Celtis laevigata*	Sugarberry	Missouri	Green	0.545	0.473		62
					Air-dry			0.515	12
159		*Celtis occidentalis*	Hackberry	Indiana, Wisconsin	Green	0.558	0.486		65
					Air-dry			0.531	12
160		*Ulmus americana*	Elm, American	Wisconsin, Pennsylvania, New Hampshire	Green	0.554	0.458		89
					Air-dry			0.507	12
161		*Ulmus fulva*	Elm, slippery	Indiana, Wisconsin	Green	0.568	0.485		85
					Air-dry			0.528	12
162		*Ulmus racemosa*	Elm, rock	Wisconsin	Green	0.658	0.574		49
					Air-dry			0.634	12
163	*Verbenaceae*	*Avicennia nitida*	Blackwood	Florida	Green	0.963	0.830		42
					Air-dry			0.830	12

TABLE 1A.—STRENGTH AND RELATED PROPERTIES OF

I. Equations expressing strength properties

1	2	3	4	5	6	7	8	9	10	11	12	13	14
													$F = 12.08 D a^{1.25}$

II. Values as determined by tests—strength values

170	*Dipterocarpaceae*	*Dipterocarpus grandiflorus*	Apitong	P. I.	*d*	0.687							97
171		*Pentacme contorta*	White Lauan	P. I.	*d*	0.485							112
172		*Shorea negrosensis*	Red Lauan	P. I.	*d*	0.523							89
173		*Shorea polysperma*	Tangile	P. I.	*d*	0.538							102
174	*Sterculiaceae*	*Tarrietia javanica*	Lumbayau	P. I.	*d*	0.571							95

11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
92	86	92	104	116	117	101	135	136	109	106	117	108	118	112	112	81	112	115	120	130	110	111	101	122	130
			128	114	105	166	115	77	103	110	95	101	142	118	110	87	115	132	107	105	146	110	128	125	96
109	102	102	66	78	73	65	106	78	60	65	60	69	62	73	98	88	120	120	117	122	86	100	97	112	108
			66	82	68	76	146	95	84	66	91	91	54	75	115	71	92	84	81		112	117	112	102	
100			93	102	112	80	97	91	116	108	126	129	75	85	103	78	89	95	96	100	105	111	110	132	129
			98	111	115	94	132	104	104	115	100	113	105	99	104	111	103	113	162	150	112	102	123	160	170
142	115	151	96	102	115	89	116	124	103	117	96	103	90	90	118	75	87	96	149	139	95	93	94	133	139
			108	104	121	103	110	187	71	99	57	99	99	102	101	80	82	94	147	184	93	89	86	125	149
127	103	139	106	114	136	88	100	105	116	123	113	102	104	106	124	91	103	112	133	120	115	115	118	136	131
			110	116	131	97	126	119	120	119	127	126	116	114	123	104	105	113	132	120	112	96	94	117	126
124	109	116	114	107	103	135	112	100	107	100	123	123	89	90	106	79	95	96	101	84	79	93	93	99	88
			115	112	112	122	130	122	97	108	93	122	98	94	114	90	89	90	113	68	97	85	80	116	123
148	124	165	118	116	144	102	106	122	121	129	116	132	107	102	124	92	97	103	129	138	100	100	100	133	156
			120	123	129	113	131	127	118	121	115	145	120	106	113	89	119	113	115	144	124	102	101	147	150
131	81	141	97	102	110	97	154	155	103	115	96	147	87	88	117	91	104	113	112	111	107	122	117	121	111
			95	93	107	89	119	168	100	98	104	137	90	88	112	89	99	102	130	136	115	106	107	119	127
153	81	142	67	83	70	75	204	156	83	77	95	208	54	66	65	82	92	98	180	183	107	118	123	163	181
			82	84	70	116	137	103	86	77	106	114	63	78	66	99	112	115	162	157	108	111	110	148	193
97	100	91	104	90	89	124	78	116	95	88	102	76	84	91	93	108	101	102		71	72	85	86	82	63
			71	77	85	59	47	48				45	62	86	78	91	85	98			108	100	96		57
			68	84	91	51	63						83	92	90	79									
													58	89	100										
50	76	52	80	68	76	88	28	26	88	82	98	56	101	98	70	118	71	81	60	67	59	72	63	46	47
			43	43	68	28	21	11	49	72	34	28	45	61	64	71	36	61	34	42	51	46	54	30	38
98	73	96	74	78	89	85	35	21	90	87	95	44	71	81	103	106	121	100	150	123	112	82	89	130	101
			88	78	88	79	62	43	66	93	48	47	75	72	84	96	72	71	140	129	139	109	101		
113	100	112	102	109	118	94	113	103	113	113	114	109	95	100	102	102	110	108	126	130	106	99	97	133	140
			94	90	104	90	84	88	117	109	124	102	88	95	110	89	97	98	114	110	111	93	97	118	142
61	73	55	120	108	69	218	138	174	104	88	124	81	106	115	54	109	123	118	61	60	113	112	99	63	54
			101	107	78	133	131	101	70	72	69	74	81	108	59	135	120	132		47	123	139	108	43	42
184	220	176	107	114	134	93	105	95	105	111	102	104	100	101	136	89	96	100	122	131	96	92	89	118	121
			125	118	142	120	130	109	110	120	107	98	111	108	145	96	112	118	94	147	104	104	105	139	150
101	116	95	79	94	73	98	125	138	88	86	91	107	78	88	64	105	105	105	158	130	121	119	113	145	140
			88	90	80	113	110	128	86	79	95	120	90	93	69	124	90	92	138		122	120	109	113	119
107	109	111	70	90	83	70	144	150	81	78	86	148	80	81	66	83	103	104	135	123	102	104	102	129	120
			79	95	81	83	120	141	98	83	116	137	79	86	64	100	107	112	89	107	97	96	101	91	101
120	100	127	101	108	103	108	130	130	95	102	91	130	78	94	102	85	103	107	145	132	105	105	106	142	126
			107	109	95	130	132	154	103	90	121	134	93	90	83	88	113	108	137	115	109	101	105	122	109
111	111	113	97	112	108	99	152	182	95	96	94	145	111	101	93	87	113	102	151	118	102	99	98	146	128
			104	114	101	115	160	211	111	98	126	147	101	101	94	93	115	110	111	73	99	95	97	109	96
93	92	86	89	107	88	93	146	136	98	100	94	124	92	97	75	88	111	106	212	128	92	93	95	161	112
			85	103	87	91	130	154	95	92	99	131	86	93	94	94	103	106	90	95	89	100	97	77	99
71	83	71	68	80	79	63	48	55	84	85	84	50	81	88	74	95	72	64	58	38	64	74	78	36	33
			65	80	89	49	76	135						82		77									

Certain Woods of the Philippine Islands

of air-dry wood in terms of density

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
$F = 20.90D_a^{1.25}$	$F = 2750D_a^{1.00}$	$F = 0.00416D_a^2$							$F = 7.38D_o^{1.25}$	$F = 8.37D_o^{1.00}$		$F = 2.71D_o^{2.25}$	$F = 2.17D_o^{1.33}$	$F = 2.17D_o^{1.33}$			$F = 1466D_o^{2.25}$	$F = 1365D_o^{2.25}$	$F = 1365D_o^{2.25}$		

expressed in percentage of equation values

95	102	98							103	109		84	99	99			87	89	89		
112	109	107	For other Philippine woods, *see* Bulletins						116	102		113	110	110			135	135	135		
85	85	90	Nos. 4 and 14, Bureau of Forestry, Philip-						106	99		92	108	108			95	96	96		
107	103	114	pine Islands 1907 and 1916.						96	96		109	98	98			108	106	106		
101	103	108							92	84		108	95	95			104	111	111		

WOODS NATIVE TO

PHILIP

STRENGTH AND

For Canada, *v.* p. 4; for

Index No.	Botanical name: Family	Botanical name: Genus and species	Local name	Place of growth	Seasoning condition	Bulk density: Green	Bulk density: Air-dry
						g/cm³	
1	2	3	4	5	6	7	8
200	*Aceraceae*	*Acer pseudo-platanus*, Linn.	Sycamore	British Isles	Air-dry		
201	*Anacardiaceae*	*Campnosperma* sp.	Terentang	Fed. Malay States	Air-dry		0.348
202		*Euroschinus falcatus*, Hook., f.	Port Macquarie beech	Australia			0.433‡
203		*Harpephyllum caffrum*, Bernh.	Kaffir plum, Zuurbesje, um-Gwenya, Mategibe	S. Africa			0.691‡
204		*Mangifera indica*, Linn.	Am, Mango, Thayet	India			0.674‡
205		*Melanorrhoea* ? sp.	Rengas	Fed. Malay States	Green	0.697	
206		*Protorhus longifolia*, Engl.	Red Cape beech, Rode Melkhout, um-Komiso	S. Africa			0.680‡
207		*Rhus lucida*, Linn.	Taaibosch, in-Tlokoebomve, Manzimane	S. Africa			1.120‡
208	*Anonaceae*	*Alphonsea ventricosa*, H., f. and Th.	Chooi	India			0.785‡
209	*Apocynaceae*	*Dyera costulata*, Hook., f.	Jelutong	Fed. Malay States	Air-dry		0.369‡
210		*Rauwolfia natalensis*, Sond.	Quinine tree, um-Hlambamasi	S. Africa			0.530‡
211	*Aquifoliaceae*	*Ilex capensis*, Sond. and Harv.	Water tree, Wittehout, um-Duma	S. Africa			0.610‡
212	*Araliaceae*	*Cussonia* sp.	Cabbage wood, um-Senge	S. Africa			0.460‡
213		*Panax pinnatum*, A. Rich.	Mutati	E. Africa	Air-dry		0.360
214	*Betulaceae*	*Betula* spp.	Birch	British Isles	Air-dry		
215	*Bombaceae*	*Bombax insigne*, Wall.	Didu, Saitu, Semul	India			0.497‡
216		*Coelostegia griffithii*, Benth.	Punggai	Fed. Malay States	Air-dry		0.537
217		*Cullenia excelsa*, Wight.	Karayani, Kabodda, Wild Durian	India	Green Oven-dry	0.492	
218	*Boraginaceae*	*Cordia platythyrsa*, Baker.	Pooli	W. Africa			0.396‡
219	*Burseraceae*	*Canarium australianum*, F. Muell.	Turpentine pine	Australia			0.644‡
220		*Canarium bengalense*, Roxb.	Neribi	India			0.625‡
221		*Canarium mauritianum*, Bl.	Colophane	Mauritius			0.813‡
222		*Santiriopsis klaineana*, Pierre	Odonomokuku, incense tree	W. Africa			0.702‡
223	*Casuarinaceae*	*Casuarina cunninghamii*, Miq.	River oak	New South Wales, Queensland			0.769‡
224		*Casuarina decussata*, Benth.	Karri Shea-oak	W. Australia	Green	0.702	
225		*Casuarina equisetifolia*, Forst.	Beefwood, Ru, Chouk, Kabwi	India, Fed. Malay States, Queensland	Green	0.785	
226		*Casuarina fraseriana*, Miq.	Shea oak	W. Australia	Green	0.723	0.744
227		*Casuarina glauca*, Sieb.	Swamp oak	Australia	Green	0.852	0.930
228		*Casuarina torulosa*, Ait.	Forest oak	Australia			1.028‡
229	*Celastraceae*	*Cathastrum capense*, Turcz.	Hard pear, coffee pear, um-Ngqangqa	S. Africa			0.900‡
230		*Elaeodendron croceum*, DC.	Saffraanhout, saffronwood, um-Bomvana	S. Africa			0.894‡
231		*Elaeodendron velutinum*, Harv.	um-Nqai, um-Ngayi	S. Africa			0.960‡
232		*Pleurostylia wightii*, Wight and Arn.	Panaka, Pairi, Chiru-piyari	Ceylon			0.879‡
233		*Ptcrocelastrus rostratus*, Walp.	White pearwood	S. Africa			0.686‡
234		*Pterocelastrus variabilis*, Sond.	Candlewood, Kersehout, Itwyina	S. Africa			1.063‡
235	*Combretaceae*	*Anogeissus acuminata*, Wall.	Yon, Chakwa, Panchi	India	Green	0.739	
236		*Anogeissus latifolia*, Wall.	Bakli, Dhaura	India	Green	0.793	
237		*Combretum kraussii*, Hochst.	Bush willow, Rodeblad, um-Dubuweklati	S. Africa			0.850‡
238		*Terminalia bialata*, Wall.	Indian silver greywood, white Chuglam, Lein, Chugalam	India			0.769‡
239		*Terminalia myriocarpa*, Huerck. and Muell. Arg.	Hollock, Panisaj, Sungloch, Shila	India			0.834‡
240		*Terminalia paniculata*, Roth	Kindal, Kirijul	India			0.898‡
241		*Terminalia procera*, Roxb.	Indian almond tree, Badam, Tarec	India			0.593‡

* Tension parallel to grain.

‡ Bulk density calculated from weight and volume at time of test, no determination of moisture content having been made.

THE BRITISH EMPIRE

HARRIS

RELATED PROPERTIES

Tropical America, *v.* p. 39

Bulk density	Moisture content	Static bending					Impact bending 22.68 kg hammer				Compression parallel to grain			Compression perpendicular to grain, fiber stress at elastic limit	Shear		Tension perpendicular to grain		Hardness			Lit.
Oven-dry		Fiber stress at elastic limit	Modulus of rupture	Modulus of elasticity	Work to elastic limit	Work to maximum load	Fiber stress at elastic limit	Modulus of elasticity	Work to elastic limit	Height of drop causing complete failure	Fiber stress at elastic limit	Maximum crushing strength	Modulus of elasticity		Radial	Tangential	Radial	Tangential	End	Radial	Tangential	
g/cm³	% oven-dry	kg/mm²			kg-cm/cm³		kg/mm²		kg-cm/cm³	cm	kg/mm²			kg/mm²	kg/mm²		kg/mm²		kg			
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
0.570		2.23	7.03	872								3.89										(5)
	16	2.25	4.18	788																		(21)
			3.54	881																		(61)
		4.57	8.40	1023	0.115							4.82										(12, 49)
			6.96	1037								6.19										(31, 43)
	45	4.50	9.61	1476																		(21)
		3.16	6.40	1085	0.054							4.41										(12)
		6.79	11.21	1253	0.197							9.78										(12)
			10.20	1234								5.79			1.083							(10, 43)
	17	2.60	4.38	717																		(21)
		2.67	4.91	726	0.054							4.54										(12)
		2.17	5.11	749	0.036							4.13										(12)
		2.34	2.86	548	0.049							2.67										(12)
	11		3.38									2.25			0.387							(22)
0.53–0.786		4.75	9.78	1470								6.62										(5)
			4.61	743								2.84			0.650							(10, 43)
	19	4.75	8.73	1476																		(21)
	55	3.93	5.89	1002	0.089		8.51	1107	0.375	69	2.18	2.72	1173	0.475	0.520	0.573	0.316	0.418	333	306	284	(38)
0.554	8	5.73	9.34	1285	0.143		14.02	1747	0.612	74	3.76	5.28	1306	0.692	0.654	0.534	0.355	0.612	465	415	488	(38)
		5.03	7.54	813	0.176							4.22			0.783							(14)
			6.14	747																		(24)
			3.92	407								3.95			1.026							(10, 43)
		5.66	10.90	1272								5.69			0.988							(63)
		2.77	4.25	812								2.25			0.494							(57)
			10.13	1178																		(61)
	46	3.54	6.34	661								2.81			0.752		8.62*					(20)
	20	5.62	11.02	1589								6.68			1.58							(10, 21, 37)
	33	7.80	8.43	953											1.041		6.33*					(20)
	43	11.46	14.52	1668											0.816		11.95*					(20)
			11.38	1654								6.11	1432		1.047		11.59*					(2, 58, 59)
		3.52	6.41	761	0.091							5.54										(12)
		5.55	9.93	986	0.175							4.98			0.916							(55)
		5.16	10.82	1375	0.116							7.24										(12)
		5.32	9.11	1037	0.152							4.36			0.524							(54)
		3.74	10.93	999	0.078							4.77										(48)
		3.61	7.96	921	0.080							4.87			1.039							(55)
	35	5.63	9.24	1346	0.134		14.10	1950	0.572	112	3.08	4.62	1377	0.931	0.910	1.300	0.499	0.689	823	757	714	(41)
	35	4.47	8.51	1138	0.103		12.73	1467	0.613	144	2.16	3.83	1199	0.967	0.997	1.111	0.447	0.607	845	812	810	(31, 34, 41, 42)
		3.82	7.96	1038	0.084							5.13										(12)
			11.52	1477								5.88			1.43							(10, 43)
			11.60									3.84			0.755							(9)
			7.43									4.62										(9)
			10.18	1098								6.52			1.032							(10, 43)

1	2	3	4	5	6	7	8
242		*Terminalia superba*, Engl. and Diels.	Afara, Affram	W. Africa	Air-dry		0.440
243		*Terminalia tomentosa*, W. and A.	Indian laurel wood, Taukkyan, Sain	India	Green	0.707	
					Air-dry		0.752
					Oven-dry		
244	*Compositae*	*Brachylaena discolor*, DC.	um-Pahla, Vaalbosch, Mapata	S. Africa		0.763	
							0.816
245		*Brachylaena hutchinsii*, Hutch.	Muhugu	E. Africa	Green	0.812	
					Air-dry		0.849
246	*Conifcrae* (or *pinaceae*)	*Abies pectinata*, DC.	European silver fir	British Isles†	Air-dry		
247		*Abies pindrow*, Spach.	W. Himalayan silver fir, Paludár, Bádar	India	Air-dry		0.385
248		*Agathis alba*	Damar Minyak	Fed. Malay States	Air-dry		0.497
249		*Agathis australis*, Steud.	Kauri pine	New Zealand	Air-dry		0.438
250		*Agathis robusta*, F. M. Bailey	Queensland kauri, Dundathu pine	Queensland			0.433‡
251		*Araucaria bidwillii*, Hook.	Bunya pine	Queensland	Air-dry		0.468
252		*Araucaria cunninghamii*, Sweet.	Moreton Bay pine, hoop pine	New South Wales, S. Queensland	Air-dry		0.470
253		*Athrotaxis sclaginoides*, D. Don.	King William pine	Tasmania			0.369‡
254		*Callitris arborea*, Schrad.	Clanwilliam cedar	S. Africa			0.618‡
255		*Callitris calcarata*, R. Br.	Black cypress pine	New South Wales, Queensland			0.753‡
256		*Callitris rhomboidea*, R. Br.	Illawara Mountain pine, cypress pine	India†	Green	0.516	
257		*Callitris robusta*, R. Br.	White cypress	W. Australia			0.657‡
258		*Callitris tasmanica*, R. T. B.	Oyster Bay pine	Victoria, N. S. W., Tasmania			0.673‡
259		*Cedrus deodara*, Loud.	Deodar, Himalayan cedar	India	Green	0.468	
					Air-dry		
					Oven-dry		
260		*Cryptomeria japonica*, D. Don.	Japanese cedar	India†	Green	0.329	
261		*Cupressus macrocarpa*, Hartw.	Monterey cypress	India†	Green	0.433	
262		*Cupressus torulosa*, D. Don.	Himalayan cypress	India	Green	0.419	
					Air-dry		0.431
263		*Dacrydium colensoi*, Hook.	Westland pine, silver pine	New Zealand	Air-dry		0.547
264		*Dacrydium cupressinum*, Soland.	Rimu, red pine	New Zealand	Air-dry		0.451
265		*Dacrydium franklinii*, Hook.	Huon pine	Tasmania	Air-dry		0.536‡
266		*Juniperus procera*, Hochst.	East African juniper	E. Africa	Air-dry		0.548
267		*Larix europaea*, DC.	Larch	British Isles†			
268		*Libocedrus doniana*, Endl.	Kawaka, Wawaku	New Zealand			0.637‡
269		*Phyllocladus rhomboidalis*, A. Rich.	Celery-top pine	Tasmania			0.609‡
270		*Picea excelsa*, Link.	Norway spruce	British Isles†	Air-dry		
271		*Picea morinda*, Link.	W. Himalayan spruce, Rai	India			
				white wood	Air-dry		0.402
				red wood	Air-dry		0.436
272		*Pinus excelsa*, Wall.	Bhotan pine, blue pine, Kail, Piuni	India	Air-dry		0.405
273		*Pinus longifolia*, Roxb.	Long-needled pine, Chir	India	Green	0.541	
					Air-dry		0.505
274		*Pinus pinaster*, Soland.	Cluster pine, maritime pine	British Isles†	Air-dry		
275		*Pinus pinea*, Linn.	Stone pine	S. Africa†			0.565‡
276		*Pinus strobus*, Linn.	Weymouth pine, white pine	British Isles†	Air-dry		
277		*Pinus sylvestris*, Linn.	Dantzic fir, Scots pine	British Isles			
				heavy timber	Air-dry		
				light timber	Air-dry		
278		*Podocarpus dacrydioides*, A. Rich.	Kahikatea, white pine	New Zealand			0.436‡
279		*Podocarpus elata*, R. Br.	Brown pine	New South Wales, S. Queensland			0.817‡
280		*Podocarpus elongata*, L'Her	Outeniqua or bastard yellowwood, Geelhout, um-Koba	S. Africa		0.450	0.481
281		*Podocarpus ferrugineus*, Don.	Miro, black pine	New Zealand			0.658‡
282		*Podocarpus gracilior*, Pilg.	Musengera, Podo	E. Africa	Air-dry		0.513
283		*Podocarpus milanjianus*, Rendle	Podo	E. Africa	Air-dry		0.574
284		*Podocarpus neriifolia*, Don.	Welimadá, Thitmin	India			0.673‡
285		*Podocarpus spicata*, R. Br.	Matai, black pine	New Zealand	Air-dry		0.715
286		*Podocarpus thunbergii*, Hook. var. *falcata*, Sim.	Upright or real yellow wood, um-Sunti	S. Africa		0.597	0.626
287		*Podocarpus totara*, Don.	Totara	New Zealand	Green	0.407	
288		*Pseudotsuga douglasii*, Carr.	Douglas fir	British Isles†	Air-dry		
289		*Sequoia sempervirens*, Endl.	Redwood	Australia†			0.465‡
290	*Cornaceae*	*Curtisia faginea*, Ait.	Assagai, um-Gxina	S. Africa			0.940‡
291	*Cunoniaceae*	*Ackama muelleri*, Benth.	Corkwood	Australia			0.641‡
292		*Ceratopetalum apetalum*, D. Don.	Coachwood	Australia			0.608‡
						0.657	
293		*Cunonia capensis*, Linn.	Red alder, Rode Els, um-Nqwaskube	S. Africa			0.721
						0.527	
294		*Platylophus trifoliatus*, Don.	White alder, Witte Els	S. Africa			0.575

* Tension parallel to grain. † Not a native of this country.

‡ Bulk density calculated from weight and volume at time of test, no determination of moisture content having been made.

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	10	4.43	5.60	894	0.120	0.222					3.08	3.93	852	0.772	0.816	1.073						(15)
	54	4.85	7.94	1168	0.114		12.46	1615	0.552	99	2.74	3.93	1395	0.823	0.752	0.974	0.369	0.443	658	699	667	(9, 31, 38)
	13	6.50	10.81	1340	0.179		18.11	2442	0.745	122	3.42	5.82	1575	1.21	1.13	1.195	0.608	0.632	1000	930	974	
0.772	9	8.51	12.92	1538	0.264		16.70	2230	0.707	127	3.60	6.77	1715	1.32	1.146	1.20	0.780	0.871	1162	960	946	
0.840	70 / 10	5.04	11.10	1292	0.108							8.29										(8, 12)
	28		4.22									4.99			0.415							(22)
	13		4.78									6.82			0.661							(23)
0.37–0.52		3.66	6.22	1224								4.24										(5)
	16	3.86	6.02	1070	0.079		7.77	1280	0.266	48	2.82	3.30	1682	0.323	0.537	0.496	0.179	0.169	284	184	204	(38)
	18	4.64	8.12	1343																		(21)
	15	4.85	6.60	937	0.159							4.29					12.73*					(1, 3, 4, 19, 28, 51)
			4.96	652																		(61)
	12		9.79									5.50										(6)
	15		6.32	1440								5.27	914		1.05		10.15*					(6, 9, 58, 59)
			3.95	581																		(61)
		3.32	5.81	617	0.099							3.87			0.356							(55, 56)
			2.85	844																		(61)
	31	3.39	4.60	648	0.103		7.27	851	0.358	58	1.89	2.75	99	0.703	0.721	0.671	0.126	0.369	481	386	377	(38)
			6.32	749																		(61)
			6.07	1252																		(61)
	45	3.62	6.09	948	0.079		8.51	1009	0.398	51	2.13	3.12	993	0.467	0.569	0.714	0.165	0.249	329	252	265	(31, 38)
		4.61	7.41	1022	0.171						3.05	4.31	1067	0.618	0.749	0.861	0.249	0.225	447	304	340	
		7.17	9.25	1191	0.238						4.58	6.28	1440	0.917	0.632	0.544	0.179	0.246	540	390	406	
	24	2.12	4.01	495	0.052		5.26	618	0.251	36	0.77	1.60	457	0.306	0.531	0.517	0.186	0.260	163	170	147	(38)
	40	2.52	4.35	647	0.057		7.28	886	0.348	43	1.17	2.27	668	0.429	0.534	0.696	0.151	0.295	340	265	288	(38)
	35	2.57	4.13	579	0.065		6.29	811	0.276	53	1.89	2.22	784	0.467	0.548	0.668	0.137	0.341	334	231	227	(38)
	10	4.70	6.43	746	0.170		9.34	1193	0.413	56	2.09	3.34	785	0.685	0.731	0.872	0.211	0.559	438	263	293	(38)
	17	3.82	6.85	1006								5.48					12.87*					(4, 28)
	14	4.86	7.85	1273								4.33					10.07*					(1, 3, 4, 19, 28)
		3.14	6.96	467	0.111																	(3)
	15		3.38									4.85			0.309							(22)
0.45–0.75		4.80	11.25	1700								6.43										(5)
		3.80	6.07	664	0.141																	(3)
			7.33	1177																		(61)
0.30–0.52		4.42	7.42	1371								4.70										(5, 61)
	15	3.81	6.17	1020	0.081		8.26	1331	0.285	53	2.14	3.15	1447	0.469	0.684	0.710	0.274	0.249	326	202	220	(38, 39)
	14	4.32	7.21	1114	0.096		9.01	1550	0.297	66	2.21	3.24	1512	0.477	0.885	0.805	0.278	0.310	336	252	268	(38, 39)
	14	3.23	4.77	693								4.40			0.802							(31, 38)
	78	3.25	5.53	1047	0.057		8.13	1205	0.309	61	2.13	2.86	1136	0.531	0.601	0.618	0.222	0.228	261	252	318	(31, 38)
	15	4.02	6.90	1175	0.077		9.32	1662	0.301	61	2.18	3.57	1575	0.485	0.752	0.773	0.214	0.172	377	295	322	(31, 38)
0.41–0.59		2.81	7.17	971								4.94			0.771							(5, 55, 56)
		2.70	7.35	669	0.061							3.49			0.579							(55, 56)
0.42 –0.55		4.71	10.23	1202								6.25										(5)
0.51 –0.76		5.22	10.97	1821								7.10					5.62*					(5, 25)
0.375–0.50		3.68	8.30	1329								5.23										(5, 25)
		2.19	5.42	889								3.19					9.46*					(3, 4, 19, 28)
			5.83	896																		(61)
0.500	110 / 10	4.08	6.08	837	0.113							3.76			0.427							(8, 12, 55)
		5.22	9.62	759	0.202																	(3)
	13		6.12									4.08			0.372							(22)
	15		5.91									4.01			0.507							(22)
			9.29	1110								5.62			1.097							(10, 43)
	12	6.73	9.98	1119	0.235							3.52					>4.92*					(3, 4, 13, 28)
0.650	100 / 10	4.76	7.13	854	0.149							4.24			0.413							(8, 12, 55)
	45	3.12	5.09	831								3.03			0.703		10.20*					(1, 3, 4, 19, 28)
0.45–0.55		4.38	7.47	1300								5.17										(5)
			6.52	1120																		(61)
		7.47	11.07	1486	0.212							6.04			0.939							(12, 55)
			10.34	1550																		(61)
			7.42	1109								4.66	941		1.365		9.03*					(59)
0.750	60 / 10 / 0 / 130	5.35	8.50	1238	0.129							4.71			0.771							(8, 55)
0.605	10 / 0	3.50	4.91	527	0.130							4.20			0.458							(8, 55)

1	2	3	4	5	6	7	8
295		*Weinmannia lachnocarpa*, F. Muell.	Mararie	New South Wales, Queensland			0.802‡
296		*Weinmannia racemosa*, Linn., f.	Kamahi	New Zealand	Green	0.512	
296.5	*Dilleniaceae*	*Dillenia indica*, Linn.	Ottengah, Thabyu, Chalta	India			0.705‡
297	*Dipterocarpaccae*	*Anisoptera* sp.	Sanai	Fed. Malay States	Air-dry		0.489
298		*Balanocarpus maximus*, King.	Chengal, Penak	Fed. Malay States	Air-dry		0.785
299		*Balanocarpus penangianus*, King.	Damar Hitan	Fed. Malay States	Green	0.589	
300		*Balanocarpus* sp.	Chengal, Penak	Fed. Malay States	Air-dry		0.609
301		*Diptcrocarpus alatus*, Roxb.	Kanyin	India	Green	0.574	
					Air-dry		0.604
					Oven-dry		
302		*Dipterocarpus pilosus*, Roxb.	Hollong	India			0.689‡
303		*Dipterocarpus* sp.	Keruing, Kruin	Fed. Malay States, Borneo	Air-dry		0.665
304		*Dipterocarpus tuberculatus*, Roxb.	In, Sooahn	India	Green	0.726	
					Air-dry		
305		*Dipterocarpus turbinatus*, Gaertn. F.	Gurjan	India	Green	0.655	
					Air-dry		
					Oven-dry		
306		*Dryobalanops aromatica*, Gaertn.	Kapur Camphor-wood	Fed. Malay States Borneo	Air-dry		0.689
307		*Dryobalanops* sp.	Kéladan	Fed. Malay States	Green	0.601	
308		*Hopea odorata*, Roxb.	Thingan, Rinda	India			0.785‡
309		*Hopea* sp.	Merawan	Fed. Malay States	Green	0.608	
310		*Shorea acuminata*, Dyer	Meranti Rambai Daun	Fed. Malay States	Green	0.447	
311		*Shorea assamica*, Dyer	Makai	India			0.577‡
312		*Shorea barbata*, Brandis	Rasak	Fed. Malay States	Air-dry		0.817
313		*Shorea contorta*, Vidal	White Lauan	Australia			0.513‡
314		*Shorea curtisii*, Dyer	Seriah	Fed. Malay States	Air-dry		0.513
315		*Shorea*, *Hopea* and *Isoptcra* spp.	Salangan batu, Yaeal	Borneo	Green	0.689	
316		*Shorea leprosula*, Miq.	Meranti Bunga	Fed. Malay States	Air-dry		0.483
317		*Shorea macroptera*, Dyer	Melantai	Fed. Malay States	Green	0.454	
318		*Shorea obtusa*, Wall.	Thitya	India			0.961‡
319		*Shorea parvifolia*, Dyer	Meranti Sarang Punai	Fed. Malay States	Air-dry		0.436
320		*Shorea robusta*, Gaertn., f.	Sál, Sákher	India	Green	0.714	
					Green	0.772	
321		*Shorea sericea*, Dyer	Meranti Kepong	Fed. Malay States	Air-dry		0.374
322		*Shorea* sp.	Damar Laut Daun Besar	Fed. Malay States	Air-dry		0.837
			Damar Laut Daun Keehil	Fed. Malay States	Air-dry		0.920
			Merani Kait Kait	Fed. Malay States	Green	0.513	
			Seraya Batu	Fed. Malay States	Air-dry		0.777
			White Seriah, eedar	Borneo			0.481–0.641‡
323		*Vatica affinis*, Thw.	Mandora	Ceylon			0.957‡
324	*Ebenaceae*	*Diospyros kurzii*, Hiern.	Andaman marble-wood, Thitkya, Peeha-da	India			0.978‡
325		*Diospyros melanida*, Poir.	Ebène marbre	Mauritius			0.768‡
326		*Diospyros pentamera*, Woods and F. Muell.	Grey plum	New South Wales, Queensland			0.705‡
327		*Diospyros* sp.	Kayu Arang	Fed. Malay States	Air-dry		0.798
328		*Euclea natalensis*, A. DC.	i-Dungamuzi	S. Afriea			0.890‡
329		*Royena lucida*, Linn.	Blaek-bark, Zwartbast, um-Tenattena	S. Afriea			0.770‡
330	*Elaeocarpaceae*	*Aristotelia racemosa*, Hook., f.	Moko	New Zealand			0.593‡
331		*Elaeocarpus dentatus*, Vahl.	Hinau	New Zealand			0.562‡
332		*Elaeocarpus grandis*, F. Muell.	Blue fig	Australia			0.665‡
333		*Sloanea woollsii*, F. Muell.	Mellow Carrabeen	Australia			0.577‡
334	*Eucryphiaceae*	*Eucryphia billiardieri*, Spaeh.	Leatherwood	Tasmania			0.785‡
335	*Euphorbiaceae*	*Baccaurea sapida*, Muell. Arg.	Lateeku, Lutio, Kanazo	India			0.673‡
336		*Beyeria viscosa*, Miq.	Pinkwood	Australia			0.704‡
337		*Bischofia javanica*, Bl.	Uriana, Tayôkthé, Aukkyu, Boa-ungza, red eedar	India			0.721‡
338		*Bridelia micrantha*, Baill.	um-Hlahlamakwaba, Mazerie	S. Afriea			0.590‡
339		*Hemicyclia australasica*, Muell. Arg.	Yellow tulip wood	Queensland, New South Wales			0.865‡
340		*Ricinodcndron africanus*, Muell. Arg.	Oehwen	W. Afriea			0.789‡
341	*Fagaceae*	*Castanea sativa*, Mill.	Sweet ehestnut	British Isles†	Air-dry		
342		*Castanopsis hystrix*, A. DC.	Chestnut, Dalné, Hingori, Sirikishu	India			0.737‡
343		*Castanopsis* sp.	Berangan	Fed. Malay States	Green	0.569	
344		*Fagus cunninghamii*, Hook.	Tasmanian myrtle, red myrtle	Australia	Green	0.653	
345		*Fagus fusca*, Hook., f.	Red beeeh, blaek bireh, Towai	New Zealand			0.577‡
346		*Fagus menzicsii*, Hook., f.	Silver beeeh, red bireh, Towai	New Zealand			0.593‡
347		*Fagus moorei*, F. Muell.	Negro head, white beeeh	New South Wales			0.860‡
348		*Fagus sylvatica*, Linn.	Beeeh	British Isles	Air-dry		
349		*Quercus lamcllosa*, Sm.	Hill oak, Búk.	India			0.945‡
350		*Quercus pcdunculata*, Ebrh.	Oak	British Isles	Air-dry		0.744
351		*Quercus robur*, Linn.	Oak	British Isles	Air-dry		
352		*Quercus scssiliflora*, Salisb.	Oak	British Isles			0.785‡

* Tension parallel to grain. † Not a native of this eountry.

‡ Bulk density ealeulated from weight and volume at time of test, no determination of moisture eontent having been made.

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
			13.30	1892																		(61)
	71	2.68	5.38	845	0.056	0.725					2.04	2.39		0.524	0.860	0.956	0.363	0.497	406	336	365	(29)
			8.34	1036								5.17				1.014						(10, 43)
	19	3.44	6.46	1012																		(21)
	17	7.81	11.49	1723																		(21)
	24	4.28	7.76	1192																		(21)
	17	6.75	9.93	1455																		(21)
	73	3.76	6.61	1039	0.077		10.70	1482	0.443	74	1.71	3.18	1122	0.534	0.671	0.752	0.506	0.745	402	413	392	(31, 38)
	17	4.25	8.79	1333	0.077		13.04	1553	0.629	76	2.86	4.57	1207	0.618	0.885	1.044	0.432	0.594	503	447	438	
		7.81	9.61	1346	0.252						4.22	6.62	1501	0.784	0.889	0.904	0.639	0.714	680	537	501	
		11.49										4.16			0.787							(34, 43)
	17	4.29	7.41	1237								3.42										(9, 21)
	50	4.91	8.15	1233	0.110		14.13	1886	0.604	102	2.58	3.96	1422	0.858	0.840	0.946	0.415	0.671	660	644	644	(31, 38, 46)
		5.07	9.79	1381	0.105						2.49	4.77	1523	0.633	0.970	1.125	0.566	0.756	715	733	710	
	66	4.88	7.75	1420	0.095		13.12	1896	0.507	81	2.73	4.12	1597	0.668	0.622	0.742	0.520	0.622	481	463	458	(38)
		5.69	10.97	1574	0.117						2.62	5.44	1672	0.833	0.816	0.946	0.886	0.618	596	633	583	
		9.47	13.83	1775	0.288						6.68	8.75	1624	0.956	0.932	0.886	0.625	0.724	703	664	646	
	19	5.03	10.04	1680								3.89										(9, 21)
	21	3.94	8.64	1399																		(21)
			11.50	1465								5.87			1.46							(10, 30, 31, 43)
	20	5.68	10.28	1623																		(21)
	20	3.38	6.62	1005																		(21)
			8.30	1102								4.49			0.934							(10, 43)
	18	5.92	13.73	2005																		(21)
			6.25	663																		(61)
	19	3.84	7.58	1234																		(21)
	28		8.66	1425								5.22										(9, 37)
	18	3.83	6.85	1203																		(21)
	21	3.97	6.77	1244																		(21)
			15.64	1776								8.54			1.873							(9, 31, 43)
	19	3.30	5.83	1033																		(21)
	56	5.56	9.92	1373	0.128		13.44	1792	0.569	101	3.53	4.65	1432	0.984	0.914	0.972	0.480	0.678	625	679	692	(31, 36, 38, 40, 43)
	28	5.55	10.65	1350	0.136							5.76			1.307							
	17	2.85	5.28	1005																		(21)
	17	6.02	13.32	1920																		(9, 21)
	17	6.33	12.88	1860																		
	31	4.10	7.53	1417																		
	16	5.17	9.21	1167																		
			7.20									3.59										
		5.46	9.64	1316	0.107							4.12			0.436							(54)
			7.80	1270								6.30			1.49							(10, 43)
		3.78	5.55	1007								4.43			1.068							(63)
			9.75	1502																		(61)
	16	5.38	11.02	1596																		(21)
		4.69	8.98	1488	0.081							4.84										(12)
		2.86	6.57	668	0.068							4.24										(12)
		3.14	6.17	452	0.131																	(3)
		4.76	6.33	975	0.129																	(3)
			8.11	1184								5.58	1087		1.466		12.46*					(59)
			9.08	1342																		(61)
			14.10	1668																		(2)
			7.51	925								4.62			0.786							(10)
		5.06	9.86	867	0.164																	(3)
			6.02	598								4.42										(10, 43)
		3.16	5.25	976	0.060							5.05										(12)
			8.82	1237																		(2, 61)
		3.81	6.29	1046								3.78			0.687							(57)
0.44–0.60		2.90	7.70	925								5.17										(5)
			7.42	908								4.05			1.274							(10, 43)
	22	3.87	6.94	1073																		(21)
	28	4.98	6.40	1327	0.104							4.07			0.876		6.27*					(51, 61)
			8.08	1054								4.20			0.63		5.60*					(3, 13, 28)
			7.73	914								4.20			0.63		5.60*					(3, 13, 28)
			8.15	1157								5.22	1274		0.736		14.40*					(2, 13, 59)
0.61–0.75		3.69	10.34	1389								5.09					7.73*					(1, 5)
			8.94	1225								5.18			1.69							(10, 31, 43)
	12		8.30									6.05					7.38*					(20)
0.60–0.813		3.78	10.37	1533								6.22					7.03–13.35*					(1, 5, 25)
			6.85	805																		(12)

1	2	3	4	5	6	7	8
354	*Flacourtiaceae*	*Dovyalis zizyphoides*, E. Mey.	Zuurbesjes, um-Kokolo	S. Africa			0.870‡
355		*Kiggelaria africana*, Linn.	Wild peaeh, Spekhout, Mpataselo	S. Africa			0.650‡
356		*Scolopia ecklonii*, Arn.	Red pear, Rode Peer	S. Africa			0.840‡
357		*Scolopia zeyheri*, Arn.	Thorn pear, Wolvedoorn	S. Africa			1.000‡
358		*Trimeria alnifolia*, Harv.	Wild mulberry, Wilde Moerbe, Xalebo	S. Africa			0.790‡
359	*Guttiferae*	*Calophyllum bracteatum*, Thw.	Walukina	Ceylon			0.519‡
360		*Calophyllum calaba*, Linn.	Gurukina	Ceylon			0.705‡
361		*Calophyllum inophyllum*, Linn.	Alexandrian laurel, Tharapi, Sultana champa, Puna	India			0.673‡
362		*Calophyllum* sp.	Bintangor	Fed. Malay States	Air-dry		0.529
363		*Calophyllum spectabile*, Willd.	Dakar talada, Pantaga, Lal chuni	India			0.617‡
364		*Garcinia conrauana*, Engl.	Orugbo	W. Africa			0.716‡
365		*Kayea assamica*, King and Prain	Sia Nahor	India	Green	0.745	
366		*Mesua ferrea*, Linn.	Penaga (F. M. S.), Nageshwa, Gangaw	India	Air-dry		0.897
367	*Hamamelidaccae*	*Bucklandia populnea*, R. Br.	Pipli, Dinghah, Singliang	India			0.721‡
368		*Parrotia jacquemontiana*, Dene.	Peshora, Shtar	India	Green	0.694	
369	*Icacinaccae*	*Apodytes dimidiata*, E. Mey.	White pear, Witte Peer, um-Dakane	S. Africa		0.636 }	0.670
370		*Villaresia moorei*, F. Muell.	New South Wales maple	Australia			0.689‡
371	*Lauraceae*	*Beilschmiedia obtusifolia*, Benth.	Pomatum wood, She beech	New South Wales, Queensland			0.737‡
372		*Beilschmiedia tarairi*, Benth. and H., f.	Taraire	New Zealand			0.888‡
373		*Beilschmiedia tawa*, Benth. and H., f.	Tawa	New Zealand	Green	0.533	
					Air-dry		0.555
374		*Cinnamomum oliveri*, F. M. Bailey	Black sassafras	Australia			0.513‡
375		*Cryptocarya patentinervis*, F. Muell.		New South Wales, Queensland			0.657‡
376		*Endiandra discolor*, Benth.	Murrogun	New South Wales, Queensland			0.753‡
377		*Endiandra pubens*, Meissn.		Queensland			0.721‡
378		*Eusideroxylon zwageri*, Teijsm. and Binn.	Borneo ironwood, Billian	Borneo	Green	0.960	
			Billian	Fed. Malay States	Air-dry		0.938
379		*Litsea calicaris*, Kirk.	Mangi, Mangeao, Tangeao	New Zealand			0.621‡
380		*Litsea reticulata*, Meissn.	She beech, Bally Gum	Australia			0.433‡
381		*Litsea reticulata*, Meissn. and *Litsea ferruginea*, Bl.	Bally gum	Australia	Air-dry		0.484
382		*Litsea* sp.	Medang	Fed. Malay States	Green	0.601	
383		*Litsea* ? sp.	Medang Tandok	Fed. Malay States	Air-dry		0.721
384		*Machilus odoratissima*, Ness.	Lalie, Leddil, Kaula, Seiknangyi	India			0.641‡
385		*Ocotea bullata*, E. Mey.	Black stinkwood, stinkhout	S. Africa		0.659 }	0.758
386		*Ocotea usambarensis*	Muzaiti, camphor	E. Africa	Green	0.547	
					Air-dry		0.558
387		*Persea semicarpifolia*	Ranai	Ceylon			1.015‡
388	*Leguminosae*	*Acacia acuminata*, Benth.	Jam wood	W. Australia	Green	0.935	
389		*Acacia arabica*, Willd.	Babul, Kikar	India			0.865‡
390		*Acacia horrida*, Willd.	Doornboom, thorn tree, um-Nga	S. Africa			0.790‡
391		*Acacia melanoxylon*, R. Br.	Blackwood	E. Australia, Tasmania			0.675‡
392		*Acacia natalitia*, E. Mey.	u-Munga	S. Africa			0.700‡
393		*Adenanthera pavonina*, Linn.	Recheda, Yivè, redwood	India			0.898‡
394		*Afrormosia laxiflora*, Harms.	Ainyesan	W. Africa			0.802‡
395		*Afzelia africana*, Sm.	Aligna	W. Africa	Oven-dry		
396		*Afzelia* spp.	Merabau	Fed. Malay States	Green	0.718	
			Ipil	Borneo			
397		*Albizzia fastigiata*, Oliver	Flat crown, Nebelele, um-Hlandhloti	S. Africa		0.415 }	0.444
398		*Albizzia lebbek*, Benth.	Sirio, Siris, Kôkko, walnut	India			0.753‡
399		*Albizzia odoratissima*, Benth.	Suriya Mara, Thitmagyi	Ceylon			0.914‡
400		*Albizzia procera*, Benth.	Thitpyu, Sit, White Siris	India			0.737‡
401		*Bauhinia variegata*, Linn.	Kachnar, Bwèchin, Bwegyin	India			0.705‡
402		*Berlinia acuminata*, Soland.	Ekpagoy	W. Africa			0.891‡
403		*Brachystegia spicaeformis*, Benth.	Okwein	W. Africa	Air-dry		0.645
404		*Cassia siamea*, Lam.	Johor	Fed. Malay States	Air-dry		0.849
405		*Castanospermum australe*, A. Cunn.	Black bean	New South Wales, Queensland			0.837‡
406		*Cylicodiscus gabunensis*, Harms.	African greenheart, Okan	W. Africa			0.934‡
407		*Dalbergia latifolia*, Roxb.	East Indian rosewood, blackwood, Kala Shishâm	India			0.882‡
408		*Dalbergia sissoo*, Roxb.	Sissoo, Shishâm	India			0.770‡
409		*Detarium senegalense*, J. F. Gmel.	Ogwega	W. Africa			1.091‡

* Tension parallel to grain.

‡ Bulk density calculated from weight and volume at time of test, no determination of moisture content having been made.

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
		2.93	5.37	618	0.086							3.65										(12)
		2.93	5.55	712	0.074							4.10										(12)
		3.52	7.00	849	0.084							3.98										(12)
		3.52	8.95	906	0.076							5.03										(12)
		3.52	8.35	909	0.076							5.08										(12)
		3.54	6.34	1157	0.060							4.32			0.237							(54)
		3.43	6.14	1037	0.059							3.79			0.666							(54)
			6.57	745								4.61			1.232							(10, 43)
	18	4.83	8.98	1490																		(21)
			7.21	855								4.28			1.030							(10, 43)
			< 19.67	1307								5.20			>0.317		7.02*					(11)
	41	5.01	8.90	1318	0.106		15.10	2135	0.599	107	2.66	4.77	1520	1.026	1.061	1.100	0.496	0.513	801	760	785	(38)
	16	8.44	16.07	2025								9.99			1.883							(10, 21, 31, 43)
			7.20	973								4.00			0.905							(10, 43)
	33	2.72	6.62	752	0.051																	(40)
	50																					
	10	4.23	9.36	1119	0.092							5.57			0.996							(8, 12, 55)
0.690	0																					
			11.98	1670																		(61)
			5.34	910																		(61)
		5.04	5.69	996	0.137																	(3)
	63	3.94	6.16	1155	0.076	0.654					2.22	3.04		0.604	0.699	0.860						(3, 4, 29)
	15	4.36	7.71	1140	0.094	0.499					2.90	3.69		0.821	1.010	1.104	0.300	0.739	526	386	376	(3, 4, 29)
																	10.13*					
			7.53	1113																		(61)
			9.29	1363																		(61)
			11.39	1372																		(2, 61)
			9.03	1303																		(61)
	23		13.81	1676								7.94										(9, 37)
	14	9.39	17.33	2398																		(21)
		5.52	6.97	901	0.188																	(3)
			5.77	925																		(61)
	17		6.93–7.84									3.66–4.29										(6)
	20	3.30	6.46	1406																		(21)
	16	5.62	11.02	1623																		(21)
			5.89	886								3.41			0.907							(10, 43)
	80																					
	10	8.06	11.49	1254	0.292							6.44			0.918							(8, 12, 55)
0.800	0																					
	83		2.46									3.38			0.429							(22)
	13		5.56									4.71			0.485							(23)
		4.81	7.42	722	0.174							4.10			0.650							(54)
	25	9.98	10.75	1655											0.830		8.44*					(20)
			11.13	1262								<11.83										(31)
		2.42	5.78	698	0.048							4.27										(12)
			7.80	1138								5.45	1260		1.453		11.03*					(51, 58, 59)
		2.34	5.99	593	0.053							3.71										(12)
			10.13	1314								7.13			1.499							(10, 43)
		3.79	7.14	1284								4.68			0.648							(57)
0.639	9	7.41	12.66	1516	0.188	0.765					4.77	6.75	1550	1.208	1.326	1.589						(15)
	21	6.87	11.51	1628								6.35										(21, 37)
	70																					
	10	6.33	9.54	961	0.232							4.77			1.012							(8, 12, 50, 57)
0.460	0																					
			9.29	1157								6.73			1.433							(10, 43, 48)
		7.02	10.27	1220	0.224							6.58			0.902							(54)
			12.63	1456								7.45			1.733							(9)
			3.84	370								2.90			0.981							(10, 43)
		2.18	6.11	981								3.78			0.543							(57)
	10	6.82	12.13	1672	0.145	0.785					4.47	6.58	1673	1.062	1.136	0.973						(15)
	18	6.23	10.84	1392																		(21)
			8.87	1188								4.28	994		1.742		6.58*					(2, 59)
		5.44	8.98	1277								5.12			1.017							(57)
			13.64	1247								7.61										(9, 31)
			9.96	1146								7.49										(31, 43)
		6.43	11.36	1458								6.23			0.785							(57)

1	2	3	4	5	6	7	8
410		*Dialium platysepalum*, R. T. B.	Kranji	Fed. Malay States	Green	0.785	
411		*Erythrina caffra*, Thunb.	Kafirboom, um-Sinsi	S. Africa	Air-dry		0.240
412		*Hardwickia binata*, Roxb.	Anjan, Acha, Yepa	India			1.313‡
413		*Koompassia parvifolia*, Prain	Tualang	Fed. Malay States	Air-dry		0.657
414		*Milletia caffra*, Meissn.	Kaffir ironwood, um-Zimbiti	S. Africa			1.150‡
415		*Pericopsis mooniana*, Thw.	Nedun, Hedun	Ceylon			1.135‡
416		*Piptadenia africana*, Hook., f.	Ekhimi, Agboin, West African greenheart	W. Africa	Oven-dry		
417		*Pterocarpus indicus*, Willd.	Padauk	India	Air-dry		0.685
418		*Pterocarpus macrocarpus*, Kurz.	Burma Padauk	India			0.865‡
419		*Pterocarpus marsupium*, Roxb.	Bijasâl, Vengai	India			0.881‡
420		*Pterocarpus santalinus*, Linn., f.	Red Sanders, Lal Chandanum	India			1.202‡
421		*Pterolobium* sp.	Agba	W. Africa	Air-dry		0.463
422		*Sindora* sp.	Sepetir	Fed. Malay States	Air-dry		0.508
423		*Sophora tetraptera*, J. Mill., var. *grandiflora*, Hook., f.	Kohwai	New Zealand			0.884‡
424		*Virgilia capensis*, Lam.	Keur, vetch-leaved Virgilia	S. Africa			0.708‡
425		*Xylia dolabriformis*, Benth.	Ironwood of Burma and Arracan, Pyinkado, Jambu	India			0.961‡
426	*Linaceae*	*Ixonanthes icosandra*, Jack.	Pagar Anak	Fed. Malay States	Air-dry		0.697
427	*Loganiaceae*	*Buddleia salvifolia*, Lam.	Saliehout, Gwangi, sagewood	S. Africa			0.810‡
428		*Nuxia floribunda*, Benth.	Wild elder, Vlier, um-Quaqu	S. Africa			0.706‡
429		*Strychnos atherstonei*, Harv.	Cape Teak, Kajatenhout, um-Hamalala	S. Africa			0.780‡
430	*Lythraceae*	*Lagerstroemia flos-reginae*, Retz.	Pyinma, Ajhar, Jarul, Taman	India	Air-dry		0.566
431		*Lagerstroemia hypoleuca*, Kurz.	Pyinma, Pabda	India			0.641‡
432		*Lagerstroemia lanceolata*, Wall.	Nana, Benteak	India			0.850‡
433		*Lagerstroemia parviflora*, Roxb.	Indian Prima Vera, Dhauri, Lendia, Sida	India			0.849‡
434		*Lagerstroemia* sp.	Bungor	Fed. Malay States	Air-dry		0.513
435		*Lagerstroemia tomentosa*, Presl.	Burmese Leza wood	India			0.802‡
436	*Magnoliaceae*	*Michelia champaca*, Linn.	Sapu, Champaca, saga	Ceylon			0.638‡
437		*Michelia excelsa*, Bl.	Magnolia, Bara champ, Gok	India			0.529‡
438	*Malvaceae*	*Hibiscus tiliaceus*, Linn.	um-Lolwa	S. Africa			0.760‡
439		*Thespesia populnea*, Soland.	Tulip tree, Portia tree, Suriya	India			0.806‡
440	*Meliaceae*	*Cedrela toona*, Roxb.	Red cedar, Toon, Tuni, Poma, Thitkado	Australia and India	Air-dry		0.479
441		*Chickrassia tabularis*, A. Juss.	Chikrassi, Arrodah, Yinma, Chittapong wood	India			0.785‡
442		*Chloroxylon swietenia*, DC.	Satinwood, Buruta, Mutirai	Ceylon			1.031‡
443		*Dysoxylon fraserianum*, Benth.	Rosewood	Australia			0.726‡
444		*Dysoxylon muelleri*, Benth.	Red bean	Australia			0.723‡
445		*Dysoxylon spectabile*, Hook., f.	Kohe Kohe	New Zealand			0.678‡
446		*Ekebergia capensis*, Sparrm.	Dog plum, Essehout, Cape ash	S. Africa		0.490	0.517
447		*Ekebergia meyeri*, Presl.	Esschout	S. Africa			0.540‡
448		*Entandrophragma candollei*, Harms.	Ikpwapobo	W. Africa			0.674‡
449		*Guarea* sp.	Scented mahogany, cedar, Obobo-Nufwa	W. Africa			0.814‡
450		*Guarea thompsoni*, Spr. and Hutch.	Obobo-Nikwi, cedar	W. Africa			0.774‡
451		*Khaya ivorensis*, A. Chev.	Mahogany, Ogwango	W. Africa			0.668‡
452		*Khaya senegalensis*, A. Juss.	Dry-zone mahogany, Ogwango	W. Africa			0.513‡
453		*Melia azedarach*, Linn.	Margosa, Nym tree, Persian lilac, bastard cedar, Thamaga	Ceylon			0.758‡
454		*Melia dubia*, Cav.	Lucumidella, Ceylon mahogany or cedar, Malai	Ceylon			0.327‡
455		*Pseudocedrela* sp.	Apopo	W. Africa			0.519‡
456		*Pteroxylon utile*, Eckl. and Zeyh.	Sneezewood, Nieshout, Mweri, um-Tati	S. Africa		0.956	0.991
457	*Monimiaceae*	*Doryphora sassafras*, Endl.	Sassafras	Australia			0.593‡
458	*Moraceae*	*Artocarpus chaplasha*, Roxb.	Kaita-da, Chaplash, Chram, Taung-peinnè	India			0.545‡
459		*Artocarpus hirsuta*, Lamk.	Aini, Ayani	India	Green Air-dry	0.516	
460		*Artocarpus integrifolia*, Linn., f.	Jak, Kanthal, Peinnè, Pilla	Ceylon			0.695‡
461		*Artocarpus lakoocha*, Roxb.	Dahu, Myauklot, Wonta	India			0.641‡
462		*Artocarpus nobilis*, Thw.	Del, Bedi-del	Ceylon			0.770‡
463		*Artocarpus rigida*. Bl.	Perian	Fed. Malay States	Air-dry		0.304
464		*Artocarpus* sp.	Keladang	Fed. Malay States	Green Air-dry	0.601	
465		*Chlorophora excelsa*, Benth. and Hook.	Iroko, Odum	W. Africa	Air-dry		0.545
466		*Ficus natalensis*, Hochst.	Wild fig, um-Tombi	S. Africa			0.410‡
467		*Ficus* sp.	Pulut Pulut	Fed. Malay States	Air-dry		0.336
468		*Sloetia sideroxylon*, Teijsm. and Binn.	Tempinis	Fed. Malay States	Air-dry		0.872

* Tension parallel to grain.

‡ Bulk density calculated from weight and volume at time of test, no determination of moisture content having been made.

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	23	7.73	13.07	2088																		(21)
0.250	10	1.17	1.93	240	0.032							1.29										(8, 12)
			11.92	1507								8.45										(31, 43)
	18	4.36	8.51	1560																		(21)
		8.09	11.83	1714	0.198							10.30										(12)
		7.13	11.28	1532	0.180							6.16			1.044							(54)
0.665	8	6.61	11.77	1508	0.151	0.556					4.68	6.75	1530	1.47	1.377	1.712						(15, 57)
	17	8.12	8.96	1537								5.21			0.956		10.16*					(10, 20, 31, 37, 43)
			10.99	879								8.78			1.647							(43, 47)
			8.73	1253								<14.02										(31)
			9.85	1271								10.00			2.620							(10, 31, 43)
	10	6.07	8.63	996	0.193	0.668					3.17	4.20	957	0.698	0.758	0.993						(15)
	17	3.90	6.77	1054																		(21)
		4.96	10.51	962	0.168																	(3)
		6.00	8.95	1040	0.193							4.47			0.954							(55)
			10.13	1280								6.10			1.386							(31, 43)
	16	5.77	11.65	1673																		(21)
		3.60	7.67	670	0.107							4.95										(12)
		7.21	10.42	1154	0.251							5.16			0.728							(55)
		2.64	7.08	806	0.045							5.21										(12)
	11	7.37	11.87	1271	0.243							6.10			1.402				792	645	640	(31, 35, 53)
			6.92	903								4.72			1.117							(10, 43)
			7.26									3.81			0.834							(9, 31, 43)
			11.46	1251								6.03			1.790							(9, 31, 43)
	19	4.72	8.35	1132																		(21)
			10.10	1147								5.96			1.388							(9, 44)
		3.30	5.49	792	0.072							2.47			0.530							(43, 54)
			7.13	812								3.95			0.700							(10, 43)
		2.34	6.71	698	0.053							4.21										(12)
		4.16	8.20	713	0.127							4.43			0.652							(54)
	12		6.98	950								5.48			1.028							(6, 31, 43, 59)
			7.77	873								6.99										(31, 43)
		5.71	9.68	1101	0.159							5.31			1.338							(31, 43, 54)
			8.37	1333								5.06	975		1.434		10.99*					(19, 58, 59)
			4.07	1086								4.88	720		1.596							(59)
		4.66	5.94	1014	0.119																	(3)
	70																					
	10	3.05	5.28	780	0.066							3.88										(8, 12)
0.520	0																					
		3.05	5.74	1043	0.059							3.78										(12)
		2.33	4.44	693								3.02			0.629							(57)
		3.08	5.13	754								2.68			0.638							(57)
		3.06	4.90	945								4.27			0.618							(57)
			<12.38	1079								4.56			>0.351		>4.24*					(11)
		2.30	4.40	867								2.87			0.533							(57)
		4.09	8.07	780	0.110							4.71			0.932							(54)
		2.08	4.02	520	0.047							2.14			0.336							(54)
		1.93	4.33	647								3.01			>0.410							(57)
	25																					
	10	9.09	13.41	1434	0.318							9.70			0.771							(8, 12, 48, 55)
1.000	0																					
			8.33	1382																		(61)
			5.97	693								4.87			0.906							(10, 43)
	80	4.82	7.52	1045	0.127		10.17	1440	0.411	76	2.99	4.14	945	0.580	0.724	0.614	0.358	0.394	481	440	470	(31, 42, 43, 62)
	13	6.19	9.37	1265			11.47			58	3.74	5.81		0.865	0.949	0.875			617	390	528	
		4.13	4.81	700	0.126							5.36			0.473							(31, 43, 54)
			10.76	1303								7.18			1.374							(10, 43)
		4.77	6.54	997	0.112							4.61			0.869							(54)
	15	2.78	4.88	773																		(21)
	61	5.62	10.27	1582																		(21)
	14	6.40	11.32	1652																		
	14	7.07	10.54	1227	0.216	0.773					5.28	5.75	1203	1.043	0.976	0.833	0.536	0.651	639	508	544	(11, 15, 18)
		2.46	3.75	528	0.064							2.76										(12)
	17	2.65	5.20	787																		(21)
	14	8.91	16.32	2030																		(21)

1	2	3	4	5	6	7	8
469	*Myristicaceae*	*Myristica irya*, Gaertn.	Black Chuglam, Maloh	India			0.833‡
470	*Myrsinaceae*	*Myrsine melanophlaeos*, R. Br.	Cape beech, Beukenhout, Magona	S. Africa		0.663	0.743
471		*Myrsine urvillei*, A. DC.	Mapau	New Zealand			0.991‡
472	*Myrtaceae*	*Angophora intermedia*, DC.	Narrow-leaved apple	New South Wales, Queensland			0.929‡
473		*Angophora lanceolata*, Cav.	Smooth-barked apple	New South Wales, Queensland			0.962‡
474		*Angophora subvelutina*, F. Muell.	Rough-barked apple	New South Wales, Queensland			0.769‡
475		*Backhousia myrtifolia*, Hook.	Grey myrtle	New South Wales, Queensland			1.042‡
476		*Eucalyptus accedens*, Fitzg.	Powder bark	Australia			
477		*Eucalyptus acervula*, Hook., f.	Red gum	Tasmania			1.026‡
478		*Eucalyptus acmenioides*, Sehau.	White mahogany	New South Wales, Queensland	Green	0.757	
479		*Eucalyptus amygdalina*, Labill.	Black peppermint	Tasmania			0.930‡
480		*Eucalyptus andrewsi*, J. H. M.	New England peppermint	New South Wales			0.849‡
481		*Eucalyptus australiana*, R. T. B. and H. G. S.	Narrow-leaved peppermint	New South Wales, Victoria			0.792‡
482		*Eucalyptus beyeri*, R. T. B.	Narrow-leaved ironbark	New South Wales			1.146‡
483		*Eucalyptus bicolor*, A. Cunn.	Flooded box	New South Wales			1.021‡
484		*Eucalyptus botryoides*, Sm.	Bangalay, mahogany	Queensland, Victoria			1.013‡
485		*Eucalyptus bridgesiana*, R. T. B.	Apple, woolly-butt	New South Wales, Victoria			0.906‡
486		*Eucalyptus calophylla*, R. Br.	Marri, red gum	W. Australia	Green	0.659	
					Air-dry		0.801
487		*Eucalyptus campanulata*, R. T. B. and H. G. S.	Stringybark	Australia			0.833‡
488		*Eucalyptus capitellata*, Sm.	Brown stringybark	Australia			0.994‡
489		*Eucalyptus citriodora*, Hook., f.	Citron-scented gum	Queensland			0.930‡
490		*Eucalyptus consideniana*, J. H. M.	White ash	New South Wales			0.930‡
491		*Eucalyptus cornuta*, Labill.	Yate gum	W. Australia	Green	0.959	
					Air-dry		1.015
492		*Eucalyptus corymbosa*, Sm.	Bloodwood	Australia			0.970‡
493		*Eucalyptus corynocalyx*, F. Muell.	Sugar gum	S. Australia			1.115‡
494		*Eucalyptus crebra*, F. Muell.	Narrow-leaved ironbark	Australia			1.120‡
495		*Eucalyptus delegatensis*, R. T. B.	Southern Mountain ash, Tasmanian oak	New South Wales, Victoria, Tasmania			0.657‡
496		*Eucalyptus diversicolor*, F. Muell.	Karri	W. Australia	Green	0.749	
					Air-dry		0.829
497		*Eucalyptus dives*, Sehau.	Peppermint, messmate	Australia			1.157‡
498		*Eucalyptus drepanophylla*, F. Muell.	Messmate, ironbark	Australia			1.077‡
499		*Eucalyptus eugenioides*, Sieb.	White stringybark	E. Australia	Green	0.739	
500		*Eucalyptus fastigata*, H. D. and J. H. M.	Stringybark	New South Wales, Victoria			0.898‡
501		*Eucalyptus fergusoni*, R. T. B.	Bloodwood ironbark	New South Wales			1.162‡
502		*Eucalyptus fletcheri*, R. T. B.	River box	New South Wales, Victoria			1.066‡
503		*Eucalyptus fraxinoides*, H. D. and J. H. M.	White ash	New South Wales			0.722‡
504		*Eucalyptus globulus*, Labill.	Blue gum	India†	Green	0.676	
					Air-dry		0.806
				New South Wales, Victoria, Tasmania	Green	0.784	
					Air-dry		0.787
505		*Eucalyptus gomphocephala*, DC.	Tuart	S. W. Australia	Green	0.874	
					Air-dry		0.972
506		*Eucalyptus goniocalyx*, F. Muell.	Mountain gum, grey gum	New South Wales, Victoria, S. Australia			0.915‡
507		*Eucalyptus hemilampra*, F. Muell.	Mahogany	New South Wales			1.058‡
508		*Eucalyptus hemiphloia*, F. Muell.	Grey box, white box, brush box, gum-top box	Australia	Green	0.754	
					Air-dry		
					Green	0.884	
509		*Eucalyptus intermedia*, R. T. B.	Bloodwood	New South Wales			1.009‡
510		*Eucalyptus jacksonii*, J. H. M.	Red Tingle Tingle, stringybark	S. W. Australia	Green	1.170‡	
					Air-dry		0.887
511		*Eucalyptus laevopinea*, R. T. B.	Silvertop stringybark	Australia			0.802‡
512		*Eucalyptus largiflorens*, F. Muell.	Red box	Australia			1.245‡
513		*Eucalyptus leucoxylon*, F. Muell.	Blue gum	S. Australia			1.163‡
514		*Eucalyptus longicornis*, F. Muell.	Morrell	W. Australia	Green	0.900	
					Air-dry		0.915
515		*Eucalyptus longifolia*, Lk. and Ott.	Woollybutt, peppermint	New South Wales, Victoria	Green	0.769	

* Tension parallel to grain. † Not a native of this country.

‡ Bulk density calculated from weight and volume at time of test, no determination of moisture content having been made.

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
			11.68	1341								6.52			1.318							(10, 43)
	80																					
	10	4.32	7.07	1089	0.103							4.34			0.794							(8, 12, 55)
0.780	0																					
		4.66	9.75	825	0.154																	(3)
			11.74	1585																		(61)
			9.53	1339																		(61)
			6.91	1128																		(61)
			15.28	2120																		(61)
		8.47	10.20	1518																		(20)
			8.46	2132																		(2)
	44		10.21	1550	0.167							6.28	1713		0.971	1.041		7.39*				(2, 6, 24, 60)
			7.18	1960																		(2)
			6.83	1017																		(2)
			10.02	1446								6.41	1557		1.100			13.79*				(2, 59)
			12.22	1562																		(2)
			8.85	1114								4.01	982		1.160			11.54*				(2, 24, 59)
			10.93	1468								4.99	875		1.613			12.25*				(2, 59)
			6.12	945																		(2)
	75	6.32	7.98	1265								4.66	873		0.506			9.56*				(2, 20)
	12	8.86	11.67	1820								6.53	1389		0.808			14.20*				
			9.38	1455																		(2)
			12.17	1588																		(2)
			8.69	1189																		(2, 24)
			12.48	1637																		(2)
	32	8.93	11.74	1617								4.69	999		0.879			13.85*				(2, 20)
	12	11.95	15.12	1969								8.16	1336		1.178			17.02*				
			9.81	1408								6.97	1354		1.373			13.88*				(2, 6, 7, 24, 52, 59)
			7.24	1144								4.18	718		1.526			7.61*				(59)
			12.25	1620								6.95	1536		1.540			12.97*				(2, 24, 58, 59)
			9.55	1523																		(2)
	54	6.04	8.09	1230								3.87	926		0.633			9.25*				(2, 7, 20)
	12	9.53	12.16	1885								7.17	1425		0.738			13.18*				
			11.30									4.84						11.04*				(27)
			9.67	1245																		(24)
	39		11.22	1460	0.172							5.70	1524		1.023	1.164		8.61*				(2, 59, 60)
			12.42	1987																		(2)
			15.94	2174																		(2)
			8.40	931																		(2)
			13.26	1782																		(2)
	52	4.60	7.93	1483	0.082		12.45	1703	0.508	104	2.27	3.59	2266	0.591	0.875	1.002	0.422	0.661	601	569	542	(38)
	13	8.00	12.79	2242	0.163		16.24	2604	0.602	135	3.79	5.83	2390	0.826	0.998	1.532	0.672	0.864	756	692	535	
	42	6.22	8.47	1652								3.99	1231		0.728			15.07*				(2, 7, 20, 55, 56, 59)
	12	10.54	11.99	2355								6.24	1793		0.946			18.14*				
	43	6.54	8.30	1146								4.91	1261		0.682			9.35*				(2, 7, 20)
	12	11.18	12.58	1800								7.49	1332		0.925			11.60*				
			10.92	1402								5.11	1072		1.314			9.49*				(2, 59)
			11.50	1608																		(2)
	70	7.16	8.79	1406								4.50	1300		0.591			9.77*				(2, 20, 24, 59)
	12	10.68	11.38	1898								6.33	1673		0.759			11.53*				
	30		12.97	1919	0.248							6.36	1794		1.132	1.315		14.78*				(60)
			11.92	1679																		(2)
		6.28	8.51	1311								4.36			0.661			8.21*				(20)
	12	10.39	12.78	2063								7.21			0.914			11.03*				
			7.13	914																		(2)
			9.96	1146								5.57	819		1.273			10.57*				(59)
			11.71	1705								6.59	1322		1.476			14.57*				(7, 58, 59)
	30	8.16	10.97	1512								5.52	1287		0.858			11.38*				(20)
	12	8.61	11.88	1687								7.81	1413		0.844			12.65*				
	40		11.51	1670	0.207							5.80	1652		1.087	1.172		14.92*				(2, 58, 59, 60)

1	2	3	4	5	6	7	8
516		*Eucalyptus loxophleba*, Benth.	York gum	W. Australia	Green	0.949	
					Air-dry		0.958
517		*Eucalyptus macrorhyncha*, F. Muell.	Red stringybark	E. Australia			0.877‡
518		*Eucalyptus maculata*, Hook., f.	Spotted gum	New South Wales, Queensland	Green	0.726	
					Air-dry		0.715?
519		*Eucalyptus marginata*, Sm.	Jarrah, West Australian mahogany	W. Australia	Green	0.727	
					Air-dry		0.787
520		*Eucalyptus media*, Link.	Blackbutt	Australia			0.929‡
521		*Eucalyptus microcorys*, F. Muell.	Tallowwood	New South Wales, Queensland	Green	0.834	
					Air-dry		0.830?
522		*Eucalyptus microtheca*, F. Muell.	Coolibah	W. Australia	Air-dry		1.271
523		*Eucalyptus muelleriana*, A. W. Howitt	Yellow stringybark	Vietoria			1.170‡
524		*Eucalyptus nanglei*, R. T. B.	Pink ironbark	Australia			1.106‡
525		*Eucalyptus nitens*, J. H. M.	Serub box, silvertop gum	New South Wales, Vietoria			1.127‡
526		*Eucalyptus obliqua*, L'Hér	Stringybark	Australia, Tasmania	Green	0.605	
					Air-dry		0.601?
527		*Eucalyptus paniculata*, Sm.	Grey ironbark	Australia	Green	0.905	
528		*Eucalyptus paniculata*, Sm. and *Eucalyptus crebra*, F. Muell.	Ironbark	New South Wales, Queensland	Green	0.915	
					Air-dry		0.915
529		*Eucalyptus patens*, Benth.	Blaekbutt	W. Australia	Green	0.687	
					Air-dry		0.772
530		*Eucalyptus patentinervis*, R. T. B.	Mahogany	New South Wales			1.058‡
531		*Eucalyptus pellita*, F. Muell.	Mahogany	Queensland			0.994‡
532		*Eucalyptus phcllandra*	Messmate	Australia			0.738‡
533		*Eucalyptus pilularis*, Sm.	Blaekbutt	E. Australia	Green	0.755	
534		*Eucalyptus piperita*, Sm.	Sydney peppermint	E. Australia			0.918‡
535		*Eucalyptus planchoniana*, F. Muell.	Tallow-wood	New South Wales, Queensland			0.977‡
536		*Eucalyptus platyphylla*, F. Muell.	Poplar gum	Australia			1.111‡
537		*Eucalyptus polyanthemos*, Sehau.	Red box	New South Wales, Vietoria			1.086‡
538		*Eucalyptus propinqua*, H. D. and J. H. M.	Grey gum	New South Wales, Queensland	Green	0.742	
					Air-dry		0.730?
539		*Eucalyptus punctata*, D. C.	Grey gum	New South Wales, Queensland	Green	0.867	
540		*Eucalyptus raveretiana*, F. Muell.	Thozet's box, iron gum tree	Queensland			1.133‡
541		*Eucalyptus redunca*, Sehau.	Wandoo, white gum	W. Australia	Green	0.989	
					Air-dry		1.015
542		*Eucalyptus regnans*, F. Muell.	Giant gum, swamp gum	Vietoria, Tasmania	Green	0.594	
					Air-dry		0.587?
543		*Eucalyptus resinifera*, Sm.	Red mahogany, forest mahogany	New South Wales, Queensland	Green	0.812	
					Air-dry		0.802?
544		*Eucalyptus robusta*, Sm.	Swamp mahogany	E. Australia			0.913‡
545		*Eucalyptus rostrata*, Sehl.	Murray red gum	E. Australia	Green	0.712	
					Air-dry		0.701?
546		*Eucalyptus saligna*, Sm.	Blue flooded gum, Sydney blue gum	New South Wales, Queensland	Green	0.681	
					Air-dry		0.672?
547		*Eucalyptus saligna*, Sm. var. *pallidivalvis*, R. T. B. and H. G. S.	Flooded gum	New South Wales			0.802‡
548		*Eucalyptus salmonophloia*, F. Muell.	Salmon gum	W. Australia	Green	0.897	
					Air-dry		0.944
549		*Eucalyptus siderophloia*, Benth.	Broad-leaved ironbark, red ironbark	New South Wales, Queensland			1.161‡
550		*Eucalyptus sieberiana*, F. Muell.	Mountain ash	Australia	Green	0.771	
551		*Eucalyptus squamosa*, H. D. and J. H. M.	Ironwood, sealy-barked red gum	New South Wales			1.090‡
552		*Eucalyptus stuartiana*, F. Muell.	Messmate, apple of Vietoria	Vietoria			1.208‡
553		*Eucalyptus tereticornis*, Sm.	Forest red gum	E. Australia			1.082‡
554		*Eucalyptus terminalis*, F. Muell.	Pale bloodwood	Australia			1.158‡
555		*Eucalyptus tesselaris*, F. Muell.	Carbeen, Moreton Bay ash	S. Australia, N. S. W. Vietoria, Tasmania			1.142‡
556		*Eucalyptus viminalis*, Labill.	Ribbony gum, manna gum	Australia			0.974‡
557		*Eucalyptus virgata*, Sieb.	{ Mountain ash / Ironbark }	{ Australia / Tasmania }			0.877‡
558		*Eucalyptus wilkinsoniana*, R. T. B.	Small-leaved stringy-bark	New South Wales			0.882‡
559		*Eugenia brachyandra*, J. H. M. and E. B.	Red apple	Australia			0.593‡
560		*Eugenia cootminiana*, C. Moore	Coolamon	New South Wales			0.738‡
561		*Eugenia cordata*, Laws	Waterbesje, um-Doni, Mutwa	S. Afriea			0.700‡

* Tension parallel to grain.

‡ Bulk density calculated from weight and volume at time of test, no determination of moisture eontent having been made.

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	30	7.03	8.59	1054								5.38	861		0.802		8.02*					(20)
	12	7.73	10.19	1265								6.96	833		0.900		9.14*					
			9.80	1373								6.23	1598		1.498							(2, 59)
	61	6.82	8.71	1442								4.08	1167		0.647		10.95*					(2, 6, 20, 24, 52, 58, 59, 60)
	12	10.54	11.32	1968								5.52	1863		0.668		13.57*					
	50	5.83	7.45	1019								4.39	939		0.661		9.42*					(2, 20)
	12	7.24	10.54	1462								6.36	1050		0.738		10.90*					
		8.24	12.83	1427	0.272																	(3)
	48	7.59	9.14	1374								4.22			0.633		9.84*					(2, 6, 20, 24, 52, 58, 59, 60)
	12	10.68	12.02	1793								5.62			0.746		11.60*					
	13	8.40	10.06	1181	0.313	0.512					5.42	6.98	1185	4.07	1.905	2.341	9.47*		1700	1670	1930	(2, 16, 20)
			11.23									5.75					10.54*					(27)
			13.72	1912																		(2)
			9.99									5.54					12.75*					(27)
	72	4.92	6.61	1195								3.27	1090		0.577		9.42*					(2, 3, 20, 27, 51, 59)
	12	10.97	11.74	2548								5.59	1673		0.984		14.62*					
	24		12.48	1867	0.213							6.62	1645		1.289	1.376	8.86*					(2, 6, 59, 60)
	40	8.75	10.26	1530								5.45			0.787		10.54*					(20)
	12	13.00	13.64	2390								7.80			0.984		13.07*					
	61	5.62	7.38	1160								3.58	876		0.626		9.31*					(20)
	12	7.73	9.98	1406								5.94	927		0.795		11.04*					
			10.04	1403																		(2)
			7.13	1004																		(2)
			9.86	1100																		(61)
	33		11.08	1634	0.198							6.06	1498		1.052	1.157	11.35*					(2, 6, 7, 24, 52, 58, 59, 60)
			9.80	1653								4.62	1258		1.365		13.63*					(2, 58)
			14.12	1912																		(2)
			11.16	1182																		(24)
			11.39	1943								5.99	1648		1.259		15.76*					(58, 59)
	64	6.54	8.02	1237								4.96	1054		0.619		8.65*					(6, 20)
	12	10.48	11.24	1968								5.91	1371		0.731		12.23*					
	33		11.22	1625	0.190							6.32	1504		1.181	1.257	10.42*					(2, 60)
			8.36	869																		(24)
	28	8.26	9.84	1300								5.85	1188		0.809		10.09*					(20)
	12	9.60	11.32	1539								7.63	1231		0.921		11.32*					
	70	4.29	6.15	1265								2.95			0.492		10.54*					(2, 20)
	12	9.00	10.19	2320								5.06			0.738		13.63*					
	52	7.86	9.28	1371								4.31			0.647		10.90*					(2, 6, 20, 24, 49, 58, 60)
	12	10.19	11.60	1897								6.01			0.689		14.34*					
			9.18	1388								5.02	1207		1.100		10.82*					(2, 58, 59)
	40	3.58	4.78	521								2.64			0.710		4.98*					(2, 20, 59)
	12	6.75	7.31	990								3.80			1.027		6.29*					
	67	6.89	8.22	1301								4.39	1090		0.619		10.87*					(2, 20, 24, 58, 59, 60)
	12	10.90	11.39	1877								6.01	1850		0.773		13.29*					
			12.92	1822																		(2)
	25	8.86	11.60	1477								5.69	910		0.851		11.88*					(20)
	12	10.54	14.13	1758								7.52	1054		1.336		13.50*					
			12.18	1649								5.83	1170		1.112		10.33*					(2, 24, 52, 59)
	34		12.24	1652	0.177							5.67	1234		0.546	0.586	9.80*					(2, 60)
			4.47	641																		(2)
			5.72	722																		(24)
			10.44	1292								6.09	1286		1.433		10.72*					(2, 24, 59)
			10.62	1134																		(24)
			10.03	1028																		(24)
			8.30	1262								3.92	875		0.936		9.32*					(2, 27, 59)
			8.76	1481								5.32	1268		1.483		12.24*					(2, 58, 59)
			13.58	1793																		(2)
			8.01	1193																		(61)
			8.26	1307																		(2)
		2.18	5.58	869	0.032							3.79										(12)

1	2	3	4	5	6	7	8
562		*Eugenia cotinifolia*, Jaeq.	Clou	Mauritius			0.978‡
563		*Eugenia jambolana*, Lam.	Jaman, black plum, Thabye	India			0.769‡
564		*Eugenia maire*, A. Cunn.	Maire	New Zealand			0.790‡
565		*Eugenia maire*, A. Cunn. var. ?	Black Maire	New Zealand			1.159‡
566		*Eugenia ridleyi*, King.	Kelat	Fed. Malay States	Air-dry		0.689
567		*Eugenia* sp.	Pomme	Mauritius			0.547‡
568		*Leptospermum ericoides*, A. Rich.	Manuka, tea tree	New Zealand			0.943‡
569		*Melaleuca maideni*, R. T. B.	Bellbowrie tea tree	Queensland			0.754‡
570		*Melalcuca styphelioides*, Sm.	Prickly-leaved tea tree	New South Wales, Queensland			1.074‡
571		*Metrosideros robusta*, A. Cunn.	Northern Rata	New Zealand			1.045‡
572		*Planchonia andamanica*, King.	Red Bambwe	India			
573		*Rhodamnia argentea*, Benth.	Silver myrtle	New South Wales			0.817‡
574		*Syncarpia laurifolia*, Ten.	Turpentine	New South Wales	Green	0.672	
					Air-dry		0.672
575		*Tristania conferta*, R. Br.	Brush box	N. Australia, New South Wales	Green	0.738	
					Air-dry		0.730?
576		*Tristania laurina*, R. Br.	Water gum	E. Australia			0.962‡
577		*Tristania suaveolens*, Sm.	Swamp mahogany	New South Wales			0.905‡
578	*Ochnaceae*	*Lophira procera*, A. Chev.	Ironwood, Kaku, Ekki	W. Africa	Air-dry		0.930
579	*Olacaceae*	*Scorodocarpus borneënsis*, Becc.	Kulim	Fed. Malay States	Air-dry		0.737
580		*Strombosia javanica*, Bl.	Dedali	Fed. Malay States	Green	0.593	
581	*Oleaceae*	*Fraxinus excelsior*, Linn.	Ash	British Isles	Air-dry		
582		*Noronhia broomeana*, Horne	Sandal	Mauritius			0.891‡
583		*Notelaea ligustrina*, Vent.	Silkwood	New South Wales, Victoria, Tasmania			1.043‡
584		*Olea foveolata*, E. Mey.	Bastard ironwood, Ijzerhout, Marochani	S. Africa			1.010‡
585		*Olea hochstetteri*, Baker	Musharagi	E. Africa	Air-dry		0.825
586		*Olea laurifolia*, Lam.	Black ironwood, Regte Zwarte Ijzerhout, Igqwanxe	S. Africa		0.802	0.897
587		*Olea verrucosa*, Link.	Wild olive, Olyvenhout, um-Ngquma	S. Africa			1.122‡
588	*Oliniaceae*	*Olinia cymosa*, Thunb.	Mountain hard pear, red berry, Satyobe	S. Africa			0.890‡
589	*Palmae*	*Borassus flabellifer*, Linn.	Tâl, Tan, The Toddy, Palmyra palm	India			0.802‡
	Pinaceae, v. Coniferae						
590	*Pittosporaceae*	*Bursaria spinosa*, Cav.	Native box	Australia			0.871‡
591		*Bursaria spinosa*, Cav. var. ?	Prickly box	Australia			0.922‡
592		*Pittosporum tenuifolium*, Gaertn.	Birch, Mapau	New Zealand			0.965‡
593	*Proteaceae*	*Banksia integrifolia*, Linn.	White honeysuckle	Australia			0.577‡
594		*Banksia serrata*, Linn.	Red honeysuckle	Australia			0.802‡
595		*Banksia verticillata*, R. Br.	River Banksia	W. Australia	Green	0.473	0.501
596		*Embothrium wickhami*, Hill and F. Muell.	Satin silky oak	Australia			0.529‡
597		*Grevillea hilliana*, F. Muell.	Red silky oak	New South Wales, Queensland			0.994‡
598		*Grevillea robusta*, A. Cunn.	Silky oak	Australia			0.641‡
599		*Knightia excelsa*, R. Br.	Honeysuckle, Rewa Rewa	New Zealand			0.785‡
600		*Orites excelsa*, R. Br.	Silky oak	Australia			0.593‡
601		*Stenocarpus salignus*, R. Br.	Beef wood	New South Wales, Queensland			0.817‡
602		*Stenocarpus sinuatus*, Endl.	Fire-tree	Australia			0.738‡
603		*Xylomelum occidentale*, R. Br.	Native pear	W. Australia	Green	0.628	0.658 (12 % M. C.)
604	*Rhamnaceae*	*Alphitonia excelsa*, Reiss.	Red ash	Queensland			0.737‡
605		*Emmenosperma alphitonioides*, F. Muell.	Bone-wood	New South Wales, Queensland			0.849‡
606		*Rhamnus zeyheri*, Sond.	Red ivory, um-Nini, Niere	S. Africa		0.806	0.925
607		*Zizyphus jujuba*, Lam.	Jujube tree, Hauthai, Bér, Bogri	India			0.784‡
608	*Rhizophoraceae*	*Anisophyllea laurina*, R. Br.	Monkey apple	W. Africa	Air-dry		0.708
609		*Bruguiera gymnorrhiza*, Lam.	Bakau Minyak	Fed. Malay States	Green	0.937	
610		*Bruguiera rheedii*, Bl.	Black or red mangrove	Australia			0.865‡
611		*Carallia calycina*, Benth.	Ubberiya	Ceylon			0.909‡
612		*Carallia integerrima*, DC.	Dawata, Kierpa, Maniawga, Andi	Ceylon			0.749‡
613		*Weihea africana*, Benth.	Musaizi	E. Africa			0.685
614	*Rosaceae*	*Leucosidea sericea*, Eekl. and Zeyh.	Oudehout, Dwa-dwa, um-Chicki	S. Africa	Air-dry		0.610‡
615		*Parinarium* sp.	Muntelor	Fed. Malay States	Green	0.729	
					Air-dry		
616		*Pygeum africanum*, Hook., f.	Bitter almond, red stinkwood, Dumizulu, Mueri	S. Africa		0.796	0.845
617	*Rubiaceae*	*Adina cordifolia*, Hook., f.	Haldu, Hnaw, Bansa	India			0.721‡
618		*Antirrhoea verticillata*, DC.	Loustau	Mauritius			0.614‡

* Tension parallel to grain.

‡ Bulk density calculated from weight and volume at time of test, no determination of moisture content having been made.

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
		5.38	16.77	1549								7.05			1.381							
			7.59	839								6.21										(31, 43)
		5.36	9.09	861	0.199																	(3, 28)
		9.77	15.90	1327	0.413																	(3)
	16	5.64	11.57	1976																		(21)
		3.95	6.64	756								3.97			0.695							(63)
		5.82	12.10	1164	0.165																	(3)
			6.99	899																		(61)
			11.26	1367																		(61)
		4.71	9.92	1188	0.139																	(3)
			8.26									3.85			1.378							(9)
			12.15	1416																		(61)
	74	5.83	7.33	1195								3.98	984		0.548		8.43*					(2, 6, 20, 24, 58, 59, 60)
	12	9.70	10.41	1652								5.38	1364		0.766		11.74*					
	65	6.47	7.91	1143								3.48			0.633		9.04*					(2, 20, 24, 60)
	12	10.33	11.04	1743								5.20			0.843		11.74*					
			9.56	1458																		(61)
			7.54	827																		(2, 24)
	17	9.73	16.08	1919	0.250	2.355					5.96	7.35	1921	1.701	1.640	1.863	0.861	1.324	1952	1727	1727	(11, 18)
	16	4.57	8.41	1336																		(21)
	40	3.94	7.83	1336																		(21)
0.55-0.78		3.76	11.53	1287								5.86										(5)
		6.44	10.18	1300								6.26			0.324							(63)
		5.67	13.15	1099	0.184																	(3)
		5.46	9.79	1613	0.109							7.08										(12)
	14		6.47									7.46			0.682							(22)
	50																					
	10	6.66	11.45	1460	0.183							7.16			0.769							(8, 12, 48, 55)
0.940	0																					
		4.45	10.07	1116	0.100							6.47			1.258							(12)
		3.92	8.18	744	0.111							5.70			0.958							(8, 12, 55)
			11.12	1490								8.36										(31, 43)
		5.06	9.56	972	0.152																	(3)
		6.33	12.02	1018	0.223																	(3)
		6.33	12.30	1045	0.212																	(3)
			5.67	752																		(61)
			9.54	1168																		(61)
	100	5.12	7.24	807											0.773		5.62*					(20)
			8.01	831																		(61)
			13.52	1963																		(2, 61)
			10.44	1208																		(61)
		4.71	8.15	949	0.134																	(3)
			7.24	1003																		(61)
			12.40	1554																		(61)
			11.43	908																		(61)
	43	4.57	5.39	594											0.647		4.92*					(20)
			10.74	1222																		(61)
			15.38	1723																		(2, 61)
	60																					
	10	4.69	9.86	1252	0.098							9.56										(12)
0.970	0																					
		4.11	5.48	672	0.140							4.37			0.713							(54)
	15	6.97	9.26	1175	0.215	0.668					3.73	4.49	1279	1.272	0.797	1.356						(17)
	20	7.03	14.23	2390																		(21)
			9.38	1620																		(61)
		4.03	7.09	1122	0.079							5.40			0.750							(54)
		3.76	7.82	886	0.085							5.31			1.001							(45, 54)
	11		14.20									6.40			0.745							(22)
		1.64	4.15	323	0.046							3.56										(12)
	32	4.08	9.13	1518																		(21)
	17	5.56	10.74	1630																		
	50																					
	10	2.99	7.48	786	0.065							5.32			0.984							(8, 12, 22)
0.870	0																					
			7.75	990								7.34										(31, 43)
		5.53	8.84	1159								4.63			1.048							(63)

1	2	3	4	5	6	7	8
619		*Mitragyna macrophylla*, Hiern.	Subaha, Ya-ya, Abura	W. Africa	Air-dry		0.503
620		*Plectronia mundtii*, Poepp.	Roek alder, Klip Esse, Sandulane	S. Africa			0.830‡
621		*Sarcocephalus esculentus*, Afzel.	Opepe, Kusiaba	W. Africa			0.806‡
622	*Rutaceae*	*Acronychia baueri*, Schott.	Brush ash	New South Wales, Queensland			0.849‡
623		*Calodendron capense*, Thunb.	Wild chestnut, Kastanjehout, Moehakalela, um-Baba	S. Africa			0.620‡
624		*Clausena inaequalis*, Benth.	um-Nukambiba	S. Africa			0.800‡
625		*Flindersia acuminata*	Putt's pine	Australia			0.577‡
626		*Flindersia australis*, R. Br.	Colonial teak, crow's ash	New South Wales, Queensland	Green	0.747	
627		*Flindersia bennettiana*, F. Mucll.	She-teak	New South Wales, Queensland			0.850‡
628		*Flindersia chatawaiana*, F. M. Bailey	Queensland maple	Queensland			0.689‡
629		*Flindersia ifflaiana*, F. Muell.	Cairn's hiekory, Queensland hiekory	Queensland			0.928‡
630		*Flindersia oxleyana*, F. Muell.	Long jack	New South Wales, Queensland			0.737‡
631		*Murraya exotica*, Linn.	Satinwood, Marehula	India			0.994‡
632		*Toddalia lanceolata*, Lam.	White ironwood, Maroogoo, um-Zani	S. Africa		0.715	0.787
633		*Xanthoxylum thunbergii*, DC.	Knobthorn, Knopjsedoorn, um-Nungumabele	S. Africa			0.940‡
634	*Salicaceae*	*Populus* spp.	Poplar	British Isles	Air-dry		
635		*Salix caprea*, Linn.	Willow	British Isles			0.490‡
636	*Sapindaceae*	*Alectryon excelsum*, Gaertn.	Titoki	New Zealand			0.916‡
637		*Allophyllus zeylanicus*, Linn.	in-Quala	S. Africa			0.750‡
638		*Blighia* sp.	Ukpe-Nikwi	W. Africa			1.148‡
639		*Cupania anacardioides*, A. Rich.	Carrot-wood, Tuckeroo	New South Wales, Queensland			0.833‡
640		*Diploglottis cunninghamii*, Hook., f.	Native tamarind	New South Wales, Queensland			0.641‡
641		*Harpullia pendula*, Planch.	Tulip wood	New South Wales, Queensland			0.930‡
642		*Hippobromus alata*, Eekl. and Zeyh.	Paardepis, Ulwatile, u-Qume	S. Africa			0.990‡
643		*Ratonia tenax*, Benth.	Brush teak	New South Wales, Queensland			0.738‡
644		*Sapindus trifoliatus*, Linn.	Soapnut, Ritha	India			1.026‡
645	*Sapotaceae*	*Bassia* sp.	Belian	Fed. Malay States	Air-dry		0.904
646		*Dichopsis petiolaris*, Thw.	Tawenna	Ceylon			0.739‡
647		*Dichopsis* sp.	Mai-aug	Fed. Malay States	Air-dry		0.612
			Nyatoh	Fed. Malay States	Air-dry		0.569
648		*Imbricaria maxima*, Poir.	Natte	Mauritius			0.848‡
649		*Mimusops caffra*, E. Mey.	Red milkwood, Chole, um-Tunzi	S. Africa			0.850‡
650		*Mimusops elengi*, Linn.	Bukal, Mulsari, Kaya	India			0.961‡
651		*Mimusops littoralis*, Kurz.	Andaman bullet-wood, Dogala, Mowha, Katpali	India			1.058‡
652		*Mimusops obovata*, Sond.	Red milkwood, um-Tunzi, Amasetole	S. Africa			0.910‡
653		*Mimusops* sp.	Baku	W. Africa	Air-dry		0.623
654		*Payena utilis*, Ridl.	Belian, Betis	Fed. Malay States	Air-dry		1.002
655		*Sideroxylon grandiflorum*, A. DC.	Tambalacoque	Mauritius			0.883‡
656		*Sideroxylon inerme*, Linn.	White milkwood, Witte Melkhout, um-Qwashu	S. Africa			0.990‡
657	*Saxifragaceae*	*Anopterus glandulosus*, Labill.	Native laurel	Australia			0.750‡
658		*Carpodetus serratus*, Forst.	White Mapau	New Zealand			0.822‡
659	*Scrophulariaceae*	*Halleria lucida*, Linn.	um-Binza	S. Africa			0.910‡
660	*Sonneratiaceae*	*Duabanga sonneratioides*, Ham.	Kokan, Lampatia	India	Air-dry		0.461
661		*Sonneratia* sp.	Perepat	Fed. Malay States	Green	0.657	
662	*Sterculiaceae*	*Commersonia echinata*, Forst.	Kurrajong	Australia			0.465‡
663		*Dombeya mastersii*, Hook.	Mukao	E. Africa	Air-dry		0.527
664		*Heritiera fomes*, Buch.	Sundri, Pinlékanazo, Mawldá	India			1.074‡
665		*Heritiera littoralis*, Dryand.	Looking-glass tree, Chomuntri, Sundri, Pinlékanazo	Ceylon			1.209‡
666		*Pterospermum suberifolium*, Lam.	Vuinauku, Vineol	Ceylon			0.648‡
667		*Sterculia tragacantha*, Lindl.	Okoko	W. Africa			0.822‡
668		*Tarrietia trifoliolata*, F. Muell.	Stavewood	Australia	Air-dry		0.838
669		*Tarrietia utilis*, Hiern.	Attabini, Niankuma	W. Africa	Air-dry		0.497
670		*Triplochiton johnsoni*, C. H. Wright	Owawa, Obeche, Arere	W. Africa	Oven-dry		
671	*Symplocaceae*	*Symplocos grandiflora*, Wall.	Bumroti, Moat soom	India			
672	*Tiliaceae*	*Berria ammonilla*, Roxb.	Halmilla, Petwun, Trincomalee wood	Ceylon			0.801‡
673		*Echinocarpus australis*, Benth.	Maiden's blush	Australia			0.513‡
674		*Entelea arborescens*, R. Br.	Corkwood	New Zealand			0.189‡
675		*Grewia occidentalis*, Linn.	Kruisbesje, um-Nqabaza	S. Africa			0.730‡
676	*Ulmaceae*	*Aphananthe philippinensis*, Planch.	Native elm, Australian hickory	Queensland, New South Wales			0.737‡
677		*Celtis rhamnifolia*, Prest.	Kamdeboo, Stinkhout, um-Vumvu, Witgalboom	S. Africa		0.636	0.699

* Tension parallel to grain

‡ Bulk density calculated from weight and volume at time of test, no determination of moisture content having been made.

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	12	5.45	7.21	1067	0.145	0.618					3.41	3.92	919	0.628	0.717	1.054	0.406	0.812	553	390	376	(18)
		3.16	7.53	908	0.057							5.89										(12)
			11.34	1345								5.72			> 0.547		5.42*					(11)
			13.88	1649																		(61)
		3.52	7.53	855	0.091							4.30										(12)
		4.34	7.89	1044	0.101							5.84										(12)
			8.84	1268																		(61)
	25		8.10	1145	0.136							5.34	1113		0.992	1.043	14.42*					(2, 6, 52, 58, 59, 60)
			14.82	1888																		(2, 61)
			10.19	1466																		(61)
			11.42	1550																		(24)
			13.33	1645																		(2, 61)
			10.80	1228								7.51			2.162							(10, 43)
	40																					
	10	5.48	11.58	1230	0.148							6.49										(8, 12, 43)
0.820	0																					
		3.66	8.03	1139	0.071							5.05										(12)
0.48		2.10	7.73	928								4.00										(5)
				832								3.24										(19)
		5.87	12.56	1113	0.173																	(3)
		5.16	9.61	1146	0.127							5.71										(12)
		5.83	9.14	1273								5.06			0.831							(57)
			12.96	1684																		(61)
			9.79	1363																		(2, 61)
			12.87	1711																		(2, 61)
		4.45	8.31	1005	0.112							6.15										(12)
			6.45	1163																		(61)
			8.38	992								6.37			2.075							(10, 43)
	19	5.69	12.99	1780																		(21)
		3.41	5.67	1253	0.048							5.44			0.762							(54)
	15	3.30	9.53	1687																		(21)
	17	5.02	8.66	1434																		(21)
		4.96	11.52	1360								6.28			0.878							(63)
		3.40	6.70	881	0.078							5.51										(12)
			16.35	1697								7.89			2.095							(10, 43)
			8.53	1008								5.42			1.101							(10, 43)
		2.58	8.62	844	0.044							4.62										(12, 48)
	13	5.99	8.72	987	0.191	0.677					3.44	4.17	1008	1.182	1.205	1.084	0.736	0.717	692	592	634	(18)
	17	9.97	16.80	2475																		(21)
		7.03	14.82	1756								6.55			1.019							(63)
		2.82	8.06	973	0.046							4.41										(12)
		4.20	7.09	576	0.177																	(3)
		4.05	8.98	810	0.127																	(3)
		3.91	9.38	1145	0.071							6.00										(12)
	11		5.97									5.26			1.003							(33)
	25	4.57	9.29	1343																		(21)
			6.72	843																		(61)
	10		5.42									4.92			0.408							(22)
			12.60	1131								< 20.48										(31, 43)
		5.65	10.18	1161	0.144							4.62			0.937							(54)
		3.08	6.69	677	0.074							3.05			> 0.342							(54)
		3.23	7.47	1389								4.44			0.647							(57)
	18		9.84–11.82									7.38–13.28										(6, 24)
	12	5.52	7.58	932	0.172	0.569					3.52	3.88	905	0.739	0.880	0.885	0.576	0.646	383	365	401	(18)
0.430	9			1069								4.85										(19)
			4.22	515								2.72			0.849							(10)
		6.21	10.87	1230	0.168							5.42			0.584							(43, 54)
			6.68	870																		(61)
		6.58	1.62	200	0.013																	(3)
		3.52	8.56	1001	0.068							6.03										(12)
			9.78	1284																		(61)
	60																					
	10	4.04	8.32	1200	0.082							5.54										(8, 12)
0.730	0																					

1	2	3	4	5	6	7	8
678		*Chaetachme aristata*, Planch.	um-Kovoti	S. Africa			0.780‡
679		*Trema guincensis*, Priemer	Pigeon wood, um-Bengele	S. Africa			0.450‡
680		*Ulmus* spp.	Elm	British Isles	Air-dry		
681	*Umbelliferae*	*Heteromorpha arborescens*, Cham. and Schl.	um-Bangandhlala	S. Africa			0.870‡
682	*Urticaceae*	*Villebrunea integrifolia*, Gaud.	Ban kotkora, Lipie	India			
683	*Verbenaceae*	*Avicennia officinalis*, Linn.	Grey mangrove	Australia			0.849‡
684		*Clerodendron glabrum*, E. Mey.	um-Qwaqwana	S. Africa			0.690‡
685		*Gmelina arborea*, Roxb.	Yamane, Gamhar	India			0.577‡
686		*Gmelina leichhardtii*, F. Muell.	White beech	Australia			0.787‡
687		*Tectona grandis*, Linn., f.	Teak, Sáka, Sáj, Ságun	India	Green	0.581	
					Air-dry		0.582
					Oven-dry		
688		*Vitex altissima*, Linn.	Milla, Nemili-adagu, Maila	India			0.977‡

*Tension parallel to grain. ‡ Bulk density calculated from weight and volume at time of test, no determination of moisture content having been made.

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(For a key to the periodicals see end of volume)

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DANISH WOODS

E. Suenson

For testing methods, *see* the original literature

Index No.	Genus and species	Local name	Bulk density, air-dry	Moisture content	Static bending			Compression		Lit.
					Fiber stress at elastic limit	Modulus of rupture	Modulus of elasticity	Parallel to grain	Perpendicular to grain	
								Maximum crushing strength	Fiber strength at elastic limit	
			g/cm³	% of oven-dry wt.	kg/mm²			kg/mm²	kg/mm²	
690	*Abies pectinata*	Ædelgran	0.440	15				3.60		(2)
691	*Picea abies* L. *	Rødgran	0.430	18	3.23	5.57	880	2.95	0.00	(3)
			0.474	15	4.06					(1, 2)
692	*Pinus laricio* v. *Austriaca*, Endl.	Østerrigsk Fyr	0.506	14.2				2.93		(2)
693	*Pinus montana*, Mill.	Bjærgfyr	0.487–0.564	12.4				2.97–5.56		(2)
694	*Pseudotsuga Douglasii*, Carr.	Douglasie	0.490	15				3.24		(2)
695	*Quercus robur*, L.†	Eg	0.740	17	3.94	8.53	910	4.20	0.58	(3)

* Tensile strength, 4.30–7.80 kg/mm² with 33–49 % moisture content (1).
† *Quercus pedunculata*, Ehrh. = *Quercus sessiliflora*, Sm.

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9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
		2.11	5.58	826	0.032							4.29										(12)
		1.88	4.65	739	0.030							3.81										(12)
0.570–0.794		4.86	9.97	1470								7.10					9.56*					(1, 5, 25)
		3.05	5.97	888	0.060							3.81										(12)
			5.40	583								3.19			0.855							(10)
			9.27	1194																		(61)
		2.34	6.23	521	0.058							3.86										(12)
			7.45	1044								4.03			0.851							(9, 31)
			5.39	1006								4.68	960		1.211		6.28*					(59, 61)
	56	4.73	7.63	1093	0.116		11.15	1434	0.487	84	2.75	3.88	1291	0.734	0.721	0.828	0.399	0.508	405	450	449	(10, 31, 32, 38, 43)
	12	6.09	9.04	1195	0.176		12.75	1605	0.564	65	3.37	5.37	1317	0.969	0.939	0.920	0.391	0.502	456	467	485	
0.599	9	6.74	10.19	1243	0.209		12.74	1781	0.512	74	3.64	5.86	1242	1.124	0.884	1.030	0.590	0.734	474	477	535	
		5.74	10.38	1136	0.161							4.91			0.706							(54)

WOODS OF THE DUTCH EAST-INDIAN ARCHIPELAGO

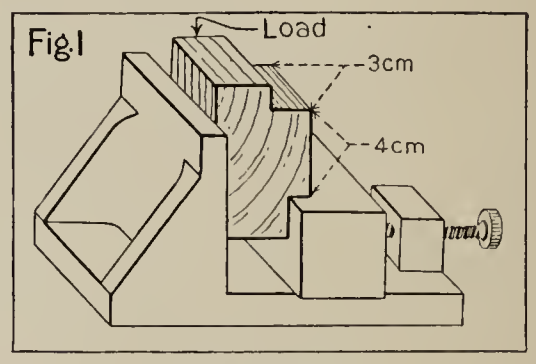
The Forest Research Institute, Buitenzorg, Java

The values recorded below were determined in the Forest Research Institute in accordance with the standard testing methods of the "IV Kongress des Internationalen Verbandes für die Materialprüfungen, Brussels, September 1906," except in the following minor points:

1. The rate of strain increase in the bending and compression tests was 50 instead of 20 kg/cm² per minute.

2. The test piece shown in the figure was used in the shear tests.

The values given are the average for 4 to 10 specimens from two or more trees of different localities, except in the case of *Swietenia mahogani* Jack. and *Tectona grandis* L., cultivated in Java, for which 30 to 40 tests were made. All specimens tested were air-dried to the average moisture content shown.



Shearing test.

Index No.	Botanical name: Family	Botanical name: Genus and species	Local name	Bulk density, air-dry,	Moisture content, air-dry	Static bending: Fiber stress at elastic limit	Static bending: Modulus of rupture	Static bending: Modulus of elasticity	Static bending: Work to elastic limit	Static bending: Work to maximum load	Compression parallel to grain: Fiber stress at elastic limit	Compression parallel to grain: Maximum crushing strength	Compression parallel to grain: Modulus of elasticity	Shear: Radial	Shear: Tangential	Hardness: End
				g/cm³	% oven-dry	kg/mm²			kg-mm/mm³		kg/mm²					kg/cm²
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
700	*Anacardiaceae*	*Buchanania arborescens*, Bl.	Popohan	0.48	16	3.20	6.83	900	0.0006	0.00593	1.74	3.47	930	0.67	0.78	431
701		*Gluta Renghas*, L.	Rengas	0.64	14	3.70	6.04	1260	.00027	.00333	3.30	4.74	1190	0.87	0.92	514
702	*Apocynaceae*	*Alstonia scholaris*, R. Br.	Pulaj	0.31	15	1.72	3.46	530	.00033	.00207	1.16	2.21	550	0.38	0.55	192
703	*Casuarinaceae*	*Casuarina equisetifolia*, Forst.	Chemara	0.71	19	5.70	9.55	1440	.00127	.00633	3.16	5.41				763
704	*Dipterocarpaceae*	*Dipterocarpus* sp.	Lagan, Kruing	0.68	15	4.99	8.79	1450	.00096	.00545	3.47	5.68		1.02	0.98	575
705		*Dryobalanops camphora*, Colebr.	Kapur	0.68	15	6.49	11.10	1585	.00147	.00814	4.31	6.18	1960	0.92	1.17	575
706		*Dryobalanops oblongifolia*, Dyer.	Petanang	0.66	16	5.67	9.71	1520	.00137	.00817	3.44	4.88	1550	0.86	1.09	545
707		*Dryobalanops oiocarpa*, v. Sl.	Sintok	0.50	14	2.55	4.66	1097	.00047	.00447	2.07	3.76		0.69	0.70	316
708		*Hopea Mengerawan*, Miq.	Merawan	0.57	14	6.35	8.00	1495	.00186	.00974	3.06	5.04	1400	0.68	0.87	583
709		*Hopea* sp.	Bankirai	0.72	17	7.88	11.69	1624	.00220	.00773	4.21	6.62	1795	0.99	1.15	686
710		*Shorea Balangeran*, Burck.	Belangiran	0.73	17	5.00	9.95	1212	.00113	.01053	3.16	5.09	1523	0.74	0.75	521
711		*Shorea* sp.	Banio	0.47	17	2.69	4.61	1030	.00040	.00507	1.53	3.83		0.54	0.44	286
			Damar merah	0.31	15	2.85	4.25	897	.00053	.00173	1.42	2.96				166
			Simantok	0.78	16	6.17	11.12	1565	.00153	.01093	3.80	5.79		1.08	1.35	630
712		*Vatica* sp.	Resak, Giam	0.79	16	6.42	10.60	1300	.00173	.00760	3.75	6.10	1585	1.15	1.24	871

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
713	*Flacourtiaceae*	*Homalium tomentosum*, Bth.	Dlingsem	0.81	16	5.90	12.50	1410	.00140	.01467	3.47	6.32	1560	1.03	1.41	1122
714	*Hamamelidaceae*	*Altingia excelsa*, Nor.	Rasamala	0.75	18	5.66	9.76	1365	.00130	.00730	3.20	5.72	1535	0.91	1.13	546
715	*Lauraceae*	*Eusideroxylon Zwageri*, T. et B.	Ijzerhout, Onglenbelian	0.85	15	7.88	13.89	1522	.00227	.01147	4.03	7.46	1650	1.01	1.44	1120
716	*Leguminosae*	*Dalbergia latifolia*, Roxb.	Sono kling, Java-palissander	0.75	14	5.35	13.27	1387	.00120	.01567	3.15	6.36	1508	1.22	1.16	953
717		*Intsia amboinensis*, Thouars.	Merbau, Ipil	0.80	14	8.37	14.54	1840	.00233	.01202	3.78	8.19				963
718	*Meliaceae*	*Swietenia macrophylla*, King.	Mahogany	0.54	15	4.57	6.73	817	.00147	.00433	2.55	4.27	853	0.92	0.87	530
719		*Swietenia mahogani*, Jack.	Mahogany	0.54	14	4.66	7.10	890	.00147	.00493	2.20	4.04	925	0.83	0.98	435
720		*Toona Sureni*, Merr.	Suren	0.38	15	3.46	5.47	860	.00077	.00340	2.05	3.44	790	0.68	0.80	323
721	*Moraceae*	*Artocarpus elastica*, Reinw.	Bendo	0.35	15	3.06	4.47	810	.00067	.00341	1.52	2.92	735	0.47	0.48	260
722	*Olacaceae*	*Scorodocarpus borneensis*, Becc.	Kulim	0.81	16	6.33	12.48	1552	.00137	.01060	3.49	6.67	1732	0.86	1.27	887
723	*Rhizophoraceae*	*Combretocarpus Motleyi*, Hook. f.	Mrapat	0.67	16	3.86	6.95	1237	.00073	.00507	2.05	4.82	1060	1.00	0.81	475
724	*Sapindaceae*	*Schleichera oleosa*, Merr.	Kesambi	0.88	16	6.11	11.56	1680	.00133	.00893	3.07	5.91	1490	1.15	1.79	1428
725	*Sterculiaceae*	*Pterospermum javanicum*, Jungh.	Bajur	0.44	17	4.45	7.55	920	.00120	.00833	2.63	3.68	1095	0.56	0.74	382
726	*Taxaceae*	*Podocarpus imbricata*, Bl.	Aruh, Djamud-juh ki ehemara	0.45	17	3.80	5.89	647	.00133	.00433	1.65	3.14				355
727	*Theaceae*	*Schima Noronhae*, Reinw.	Puspah, Seru	0.60	16	5.81	10.00	1488	.00133	.01056	3.34	5.49	1644	0.81	1.05	505
728	*Tiliaceae*	*Actinophora fragrans*, R. Br.	Walikukun	0.85	18	6.83	14.52	1520	.00172	.01974	4.26	7.10	1930	1.24	1.56	1220
729	*Ulmaceae*	*Celtis Wightii*, Planch.	Pendjalinan	0.72	16	4.20	11.60	1420	.00070	.02151	2.34	4.96	1590	1.13	1.31	775
730	*Verbenaceae*	*Tectona grandis*, Lin. f.	Djati, teak	0.59	14	5.75	8.90	1410	.00193	.01000	3.00	4.90	1316	0.82	0.97	396
731		*Vitex pubescens*, Vahl.	Laban	0.70	16	7.47	12.72	1510	.00207	.01040	4.69	6.84	1660	1.07	1.15	795

WOODS OF JAPAN AND EASTERN ASIA

Homi Shirosawa

The values recorded below are based on tests made in the Central Forest Experiment Station (Ringyo-Shikenjo), Meguro, Tokyo, Japan.

The equations expressing the relation between the density and the stress were derived from the bulk density of air-dried specimens (moisture content, 16 %) and the green and oven-dry densities, given in the column "bulk density," are based on the volume in the air-dry condition (moisture content, 16 %).

The testing methods employed were those described above under "Woods of North America," with the following exceptions:

Static Bending.—Specimen 6 × 6 × 48 cm, 42 cm span mainly (85 % of all specimens); 0.1 cm per min.

Compression Parallel to Grain.—Specimen 6 × 6 × 6 cm mainly (83 % of all specimens); 0.1 cm per min.

Compression Perpendicular to Grain.—Specimen 6 × 6 × 6 cm mainly (85 % of all specimens); 0.1 cm per min.

Shear Parallel to Grain.—Shear over a 9 × 4 cm area; 0.1 cm per min.

Tension Parallel to Grain.—Tension over a 2.25 cm area; 0.1 cm per min.

Hardness.—Specimen 6 × 6 × 6 cm. Depth of indentation when the steel cylinder with 3 cm diameter hemispherical end is forced into the specimen with the load of 2000 kg against radial and tangential surfaces, and with 4000 kg against end surface.

Den unten angegebenen Werten liegen Prüfungen zu Grunde, welche im Central Forest Experiment Station (Ringyo-Shikenjo) Meguro, Tokyo, Japan, gemacht worden sind.

Die Gleichungen, welche die Beziehung zwischen Dichte und Druck enthalten sind aus der durchschnittlichen Dichte des lufttrockenen Materials abgeleitet. (Feuchtigkeitsgehalt 16 %) und die Dichten des frischen und ofentrockenen Materials, die in der Kolonne "bulk density" stehen, gründen sich auf den lufttrockenen Zustand (Feuchtigkeitsgehalt 16 %).

Die angewendeten Prüfungsmethoden waren die gleichen, welche unter "Woods of North America" angegeben sind. Mit Ausnahme:

Statischer Biegeversuch.—Muster 6 × 6 × 48 cm durchschnittliche Spannweite 42 cm (85 % aller Muster); 0,1 cm in der Min.

Les valeurs mentionnées ci-dessous sont basées sur des essais effectués à la Central Forest Experiment Station (Ringyo Shikenjo) Meguro, Tokio, Japon.

Les équations exprimant la relation entre la densité et la tension ont été déduites de la densité apparente d'éprouvettes séchées à l'air (teneur en humidité, 16 %), et les densités du bois vert et du bois séché au four, données dans la colonne "bulk density" sont basées sur le volume de l'éprouvette séchée à l'air (teneur en humidité, 16 %).

Les méthodes d'essais employées sont celles déjà décrites dans "Bois de l'Amérique du Nord" à l'exception des suivantes:

Essai de flexion statique.—Eprouvette 6 × 6 × 48 cm, portée principalement 42 cm (85 % de toutes les éprouvettes); 0,1 cm par minute.

Compression parallèle à la fibre.—Eprouvette 6 × 6 × 6 cm principalement (83 % de toutes les éprouvettes); 0,1 cm par minute.

Compression perpendiculaire à la fibre.—Eprouvette 6 × 6 × 6 cm principalement (85 % de toutes les éprouvettes); 0,1 cm par minute.

Cisaillement parallèle à la fibre.—Cisaillement sur une surface de 9 × 4 cm; 0,1 cm par minute.

Traction parallèle à la fibre.—Traction sur une surface de 2,25 cm^2; 0,1 cm par minute.

Dureté.—Eprouvette 6 × 6 × 6 cm. Profondeur de l'empreinte produite par un cylindre d'acier terminé par un hémisphère de 3 cm de diamètre forcé dans l'éprouvette avec une charge de 2000 kgs contre la surface radiale et tangentielle, et de 4000 kgs contre la surface terminale.

I valori qui sotto riportati sono stati dedotti da prove eseguite nella Central Forest Experiment Station (Ringyo-Shikenjo), Meguro, Tokyo, Giappone.

Le equazioni che esprimono la relazione fra la densità e la pressione sono derivate dalla densità (volumetrica) del materiale asciugato all'aria (con 16 per cento d'acqua): le densità del materiale greggio e quello asciugato alla stufa, i quali si trovano nella colonna "bulk density," sono fondate sul volume del materiale asciugato all'aria (il tenuto d'acqua essendo 16 per cento).

I metodi impiegati per i saggi sono gli stessi riportati nel capitolo "Legni dell'America del Nord" fatta eccezione per quanto segue:

Flessione statica.—Provetta 6 × 6 × 48 cm, distanza media tra gli appoggi 42 cm (85 % di tutti i campioni); 0,1 cm al minuto.

Druck parallel zur Faserrichtung.—Muster 6 × 6 × 6 cm hauptsächlich (83 % aller Muster); 0,1 cm in der Min.

Druck senkrecht zur Faserrichtung.—Muster 6 × 6 × 6 cm hauptsächlich (85 % aller Muster); 0,1 cm in der Min.

Scherversuch parallel zur Faserrichtung.—Scherung über 9 × 4 cm, 0,1 cm in der Min.

Zug parallel zur Faserrichtung.—Zug über eine Fläche von 2,25 cm², 0,1 cm in der Min.

Härte.—Muster 6 × 6 × 6 cm. Eindruckstiefe eines Stahlzylinders mit halbkugelförmigem Ende (Durchmesser 3 cm) beobachtet, bei Belastung mit 2000 kg gegen die radiale und tangentiale Oberfläche und mit 4000 kg gegen die Endfläche.

Compressione parallela alla fibra.—Provetta 6 × 6 × 6 cm per la massima parte (83 % di tutti i campioni); 0,1 cm al minuto.

Compressione perpendicolare alla fibra.—Provetta 6 × 6 × 6 cm per la massima parte (85 % di tutti i campioni); 0,1 cm al minuto.

Taglio nel senso della fibra.—Taglio sopra 9 × 4 cm; 0,1 cm al minuto.

Trazione nel senso della fibra.—Trazione sopra una superficie di cm² 2,25; 0,1 cm al minuto.

Durezza.—Provetta 6 × 6 × 6 cm. Profondità di impronta di un cilindro di acciaio con estremità emisferica (diametro 3 cm) osservata caricando con 2000 kg contro la superficie radiale e tangenziale e con 4000 contro la superficie terminale.

STRENGTH AND RELATED PROPERTIES

Index No.	Botanical name: Family	Botanical name: Genus and species	Local name	Bulk density: Green (g/cm³)	Bulk density: Air-dry (g/cm³)	Bulk density: Oven-dry (g/cm³)	Moisture content green, %	Static bending: Fiber stress at elastic limit (kg/mm²)	Static bending: Modulus of rupture (kg/mm²)	Static bending: Modulus of elasticity (kg/mm²)	Static bending: Work to elastic limit (kg-mm/mm³)	Compression parallel to grain—maximum crushing strength (kg/mm²)	Compression perpendicular to grain (kg/mm²)	Shear parallel to grain (kg/mm²)	Tension parallel to grain (kg/mm²)	Hardness: End (cm)	Hardness: Radial (cm)	Hardness: Tangential (cm)
I. Equations expressing strength in terms of density																		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
								$F = 6.50\ D_a^{1.20}$	$F = 10.10\ D_a^{1.20}$	$F = 1350\ D_a^{1}$	$F = 0.0053\ D_a^{2}$	$F = 7.00\ D_a^{1}$	$F = 2.31\ D_a^{2}$	$F = 1.34\ D_a^{1}$	$F = 8.64\ D_a^{1}$	Actual value given below	Actual value given below	Actual value given below
II. Values as determined by tests—strength values expressed in percentage of equation values																		
751	*Aceraceae*	*Acer japonicum*, Thunb.	Hauchihakaede		0.72	0.60			98	88		87		105	71		0.15–0.18	0.12–0.27
752		*Acer palmatum*, Thunb.	Kaede	0.96	0.70	0.60	60		85	145		83		116	136	0.54	0.36	0.36
753		*Acer pictum*, Thunb. var. *typicum*, Koidz.	Itayakaede	0.86	0.67	0.57	54		83	90		100		98	99	1.08	0.18	
754		*Acer rufinerve*, S. and Z.	Urihadakaede	0.88	0.59	0.51	73		84	96		87		117	108	2.10		
755	*Anacardiaceae*	*Rhus vernicifera*, DC.	Urushi	0.88	0.51	0.44	100		118	105		136			127	0.09		
756	*Aquifoliaceae*	*Ilex crenata*, Thunb.	Inutsuge	1.04	0.72	0.63	65		74			81			75			
757		*Ilex macropoda*, Miq.	Aohada		0.66	0.57			106			108				0.12		
758	*Araliaceae*	*Kalopanax ricinifolius*, Miq.	Harigiri	0.83	0.54	0.47	75		105	105		91	99	101	84	1.08	0.42	0.36–0.42
759	*Betulaceae*	*Alnus firma*, S. and Z. var. *Sieboldiana*, Winkel.	Yashabushi		0.64	0.55			72	54		76		91		0.45		
760		*Alnus incana*, Willd. var. *sibirica*, Spach.	Yamahannoki	0.75	0.50	0.40	88		72	55		90			99	3.00	0.90	0.90
761		*Alnus japonica*, S. and Z.	Hannoki	0.69	0.50	0.42	60		95	77		101		87	96	3.00		
762		*Betula carpinifolia*, S. and Z.	Midzume		0.77	0.66		83	85	81	98	87		108	84			
763		*Betula Ermanni*, Cham. and Schl. var. *japonica*, Koidz.	Makamba	1.01	0.63	0.55	84		127	132		107			107			
764		*Betula japonica*, Sieb.	Shirakamba		0.70	0.60		75	84	77	123	88		101	110	1.05	0.36	0.18–0.42
765		*Betula Maximowicziana*, Regel.	Saihadakamba		0.68	0.58			118	72		96				0.06		
766		*Betula Schmidtii*, Regel.	Onoorekamba		0.86	0.75			120	146		122		125	108	0.03		
767		*Betula ulmifolia*, S. and Z.	Yogusominebari	0.91	0.70	0.60	52	110	107	155	116	109	90		97	0.03		
768		*Carpinus cordata*, Bl.	Sawashiba	0.93	0.71	0.57	63		110	114		100		111		0.09		
769		*Carpinus japonica*, Bl.	Kumashide	1.00	0.72	0.58	72		133	93		104		137	129			0.06
770		*Ostrya italica* Scop. var. *virginiana*, Winkel.	Asada		0.70	0.60			89	90		109	79	110	77	0.06	0.21	0.12
771	*Buxaceae*	*Buxus japonica*, Muell. Arg.	Tsuge	1.01	0.75	0.65	55		124	70		91				0.03		
772	*Cornaceae*	*Cornus controversa*, Hemsl.	Midzuki	0.90	0.60	0.50	80		88	65		98		99	84	0.90		0.12–0.15
773	*Ebenaceae*	*Diospyros lotus*, L.	Mamegaki		0.60	0.50			99	71		85			81	0.84	0.15–0.18	
774	*Euphorbiaceae*	*Bischoffia javanica*, Bl.	Akagi		0.75	0.65		70	75	88	47	57		97	127			
775	*Fagaceae*	*Castanea sativa*, Mill.	Kuri	0.98	0.60	0.52	89		81	81		91	90	96	89	3.00	0.42–0.57	0.12–0.80
776		*Castanopsis taiwaniana*, Hay.	Kurikashi		0.77	0.66		98	90	111	63	74						
777		*Fagus Sieboldi*, Endl.	Buna	1.08	0.66	0.57	90	128	108	128	100	117		100	110	0.30	0.54	0.30
778		*Pasania cuspidata*, Oerst.	Shii	1.28	0.62	0.54	137	104	103	91	108	94		92	107		0.33	0.39–0.48

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
779		*Pasania glabra*, Oerst.	Shiribukagashi		0.69	0.60			106	88		120						
780		*Quercus acuta*, Thunb.	Akagashi	1.15	0.85	0.73	58	103	92	94	82	80		96	107	0.03	0.06	0.03–0.05
781		*Quercus amygdalifolia*, Skan.	Amigashi		1.16	0.93		91	74	102	50	75		75	102		0.42	0.36
782		*Quercus crispula*, Bl.	Ōhnara	1.02	0.73	0.63	62	71	75	91	89	98		85	77	0.06	0.12	
783		*Quercus gilva*, Bl.	Ichiigashi	1.05	0.80	0.68	54	122	108	89	88	85		94	98	0.09	0.15–0.21	0.12–0.15
784		*Quercus glandulifera*, Bl.	Konara	1.11	0.75	0.65	71	90	89	97	97	95		87	119	0.06	0.09	0.09
785		*Quercus glauca*, Thunb.	Arakashi	1.17	0.82	0.70	67		102	117	77	88		100	91	0.03	0.06–0.18	0.06–0.09
786		*Quercus myrsinaefolia*, Bl.	Shirakashi	1.11	0.85	0.72	54	95	96	70	78	89		115	84	0.03	0.03–0.06	0.03–0.05
787		*Quercus phyllireoides*, A. Gr.	Ubamegashi	1.24	0.85	0.74	68								147			
788		*Quercus serrata*, Thunb.	Kunugi		0.84				70	68		95		89	110	0.03		
789		*Quercus stenophylla*, Makino.	Urajirogashi	1.08	0.83	0.70	54	139	126	134	88	103		97	113	0.03		
790	*Ginkgoaceae*	*Ginkgo biloba*, L.	Ichō	0.84	0.44	0.38	111		104	92		100		104	71		1.38–1.50	1.20–1.38
791	*Hamamelidaceae*	*Distylium racemosum*, S. and Z.	Isunoki	1.31	0.96	0.83	58		115	118		92		103	84	0.03		
792	*Hippocastanaceae*	*Aesculus turbinata*, Bl.	Tochinoki	0.70	0.60	0.50	40	113	113		105	92		113	111			
793	*Juglandaceae*	*Juglans mandschurica*, Maxim.	Manshūgurumi		0.48	0.42		117	110	143		128						
794		*Juglans Sieboldiana*, Maxim.	Onigurumi	0.90	0.54	0.47	92	107	100	132	97	113	125	111	136	1.02	0.33–0.85	0.33–0.66
795		*Pterocarya rhoifolia*, S. and Z.	Sawagurumi	0.56	0.40	0.35	60		126	69		91	104	107	138	3.00		
796	*Lauraceae*	*Actinodaphne lancifolia*, Meisn.	Kagonoki	1.03	0.71	0.63	64		77	83		77		109			0.02	0.06
797		*Cinnamomum camphora*, Ness.	Kusu	0.97	0.55	0.45	116		71	95		106	99	75	66		0.96	0.60
798		*Cinnamomum pedunculatum*, Ness.	Yabunikkei	0.89	0.55	0.46	94		70	81		86		103	90	3.00	0.84	0.72
799		*Machilus Thunbergii*, S. and Z.	Tabu	1.01	0.69	0.55	84	76	74	107	105	107	106	83	114	0.06		0.42
800	*Leguminosae*	*Acacia confusa*, Merril.	Sōshiju		0.96	0.77		60	67	69	41	60						
801		*Albizzia Julibrissin*, Durraz.	Nemunoki	0.86	0.55	0.47	83		86	74		89			159			0.30
802		*Gleditschia horrida*, Makino.	Saikachi	1.03	0.74	0.64	61		95	87		92				0.09	0.09–0.15	0.09–0.12
803		*Maackia amurensis*, Rupr. and Maxim.	Inuenju	0.98	0.75	0.63	56		107	95		78	79	106	112	0.06		0.12
804	*Magnoliaceae*	*Magnolia hypoleuca*, S. and Z.	Hōnoki	0.86	0.51	0.44	84		98	116		92	110	113	113	3.00	0.27	0.24
805		*Magnolia Kobus*, DC.	Kobushi	0.75	0.60	0.50	50		86	80		107		91	95	0.06		
806	*Moraceae*	*Ficus retusa*, L. var. *nitida*, Miq.	Gajumaru	0.90	0.58	0.50	80		61	52		83						
807		*Morus alba*, L. var. *stylosa*, Bureau	Yamaguwa	0.98	0.67	0.58	69		100	85		102			116	0.06	0.12	0.06
808	*Myricaceae*	*Myrica rubra*, S. and Z.	Yamamomo	1.08	0.67	0.58	86		96	93		113		98	81	0.12		
809	*Oleaceae*	*Fraxinus Bungeana*, DC. var. *pubinervis*, Wg.	Toneriko	1.02	0.71	0.60	70		149	103		103		98	111		0.06–0.09	0.06
810		*Fraxinus longicuspis*, S. and Z.	Aotago		0.70	0.61			110	86		100		100				
811		*Fraxinus mandschurica*, Rupr.	Yachidamo	0.94	0.62	0.54	74		92	115		108	89	105	119		0.82	0.48
812		*Fraxinus Sieboldiana*, Lingelsh.	Shioji	0.90	0.66	0.56	61	125	137	117	67	116		100	108	0.06		
813	*Pinaceae*	*Abies firma*, S. and Z.	Momi	0.97	0.48	0.42	131	106	105	139	126	105	98	101	122	3.00	0.63–1.44	0.30–1.17
814		*Abies sachalinensis*, Mast.	Todomatsu	0.82	0.41	0.35	134	95	96	106	118	125	106	111	98	3.00		
815		*Abies Veitchii*, Lindl.	Shirabe	0.73	0.40	0.33	121	88	100	93	118	124	97	124	94	3.00		1.44–1.80
816		*Chamaecyparis formosensis*, Matsum.	Benihi		0.37	0.32		98	97	106	65	103			94			
817		*Chamaecyparis obtusa* form. *formosana*, Hayata.	Taiwanhinoki		0.48	0.41		100	119	131	68	98			113			
818		*Chamaecyparis obtusa*, S. and Z.	Hinoki	0.98	0.46	0.40	145	132	125	115	134	123	106	110	93	3.00		1.08
				*	0.43	0.37		99	94	146		116	88					
819		*Chamaecyparis pisifera*, S. and Z.	Sawara	0.80	0.35	0.30	167		102	121		109		98	70	3.00		3.00
820		*Cryptomeria japonica*, Don.	Sugi	0.89	0.40	0.34	162	125	129	111	118	141	111	102	81	3.00		0.90–1.14
				†	0.36	0.31		121	131	75	131	107						
821		*Larix dahurica* var. *Principis Rupprechtii*, Rehd. and Wilson.	Chōsenkaramatsu		0.67	0.56		82	80	81		99		68	121			
822		*Larix leptolepis*, Gord.	Karamatsu	0.95	0.58	0.50	90	101	97	99	101	109	86	115	104	0.15	0.42	
823		*Libocedrus macrolepis*, Benth.	Shōnanboku		0.69			69	74	76	53	76						
824		*Picea ajanensis*, Fisch.	Ezomatsu	0.71	0.42	0.37	92	108	103	96	117	112	106	116	126	3.00		3.00
825		*Picea Glehnii*, Mast.	Akaezomatsu		0.47	0.41		153	141	134	137	153	96	104	154	3.00		3.00
826		*Picea Hondoensis*, Mayr.	Tōhi		0.43	0.38		100	106	112	153	119	101	103	110	3.00	1.14	3.00
827		*Pinus densiflora*, S. and Z.	Akamatsu	0.95	0.52	0.46	98	137	135	110	101	95	79	97	92	3.00	1.14	
828		*Pinus koraiensis*, S. and Z.	Chōsenmatsu	0.91	0.51	0.45	102	60	70	65	101	66		69	56	3.00	1.14–1.20	
829		*Pinus Thunbergii*, Parl.	Kuromatsu	0.97	0.53	0.47	106		100	110		125		96	71	3.00	0.42–1.65	1.20
830		*Pseudotsuga japonica*, Shirasawa.	Togasawara	0.94	0.50	0.43	119		103	127		131		116	81	3.00		3.00
831		*Sciadopitys verticillata*, S. and Z.	Kōyamaki		0.50	0.45			95	122		87		108	93	3.00		
832		*Taiwania cryptomeriodes*, Hay.	Taiwansugi		0.47	0.40		101	105	121	43	105						
833		*Thuja japonica*, Maxim.	Nezuko	0.61	0.37	0.32	91		95	86		115		112	74	3.00		3.00
834		*Thujopsis dolabrata*, S. and Z.	Hiba	0.97	0.50	0.44	120	113	109	132	115	115	87	89	79	3.00	3.00	1.44
835		*Tsuga Sieboldii*, Carr.	Tsuga	1.02	0.53	0.45	117	124	120	127	121	137	94	128	104	3.00	0.30–0.54	0.21–0.42
836	*Rosaceae*	*Micromeles alnifolia*, Koidz.	Adzukinashi	0.80	0.60	0.50	60		84	77		97		97	74	0.06		
837		*Photinia villosa*, DC.	Ushikoroshi	1.16	0.90	0.80	46		95	71					72	0.06	0.03	0.03
838		*Prunus donarium*, Sieb. subsp. *clegans*, Koidz. var. *glabra*, Koidz.	Yamazakura	1.05	0.67	0.58	81		91	97		73	96	102	116	0.24	0.12	0.09–0.12
839		*Prunus Grayana*, Maxim.	Uwamizuzakura	0.79	0.62	0.52	52								117			
840		*Prunus spinulosa*, S. and Z.	Rinboku	1.03	0.75	0.65	59		101	92		92		99	117	0.12	0.06–0.09	0.06–0.09
841	*Rutaceae*	*Phellodendron amurense*, Rupr.	Kihada	0.64	0.48	0.42	52		104	125		113	122	102	131	3.00	0.72–0.78	0.18–0.42
842	*Salicaceae*	*Populus balsamifera*, L.	Deronoki	0.83	0.38	0.33	152		88	114		85	106	94	82	3.00		
843		*Populus tremula*, L. var. *villosa*, Wesm.	Yamanarashi	0.70	0.48	0.40	75	111	111	97	71	118	120	131	147	3.00		
844	*Scrophulariaceae*	*Paulownia tomentosa*, Bail.	Kiri	0.56	0.31	0.27	107		119	96		107		110	86	3.00		3 00
845	*Simarubaceae*	*Picrasma quassioides*, Benn.	Nigaki	0.70	0.58	0.50	40		96	139		94	116	117	111	0.41	0.48	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
846	*Styracaceae*	*Styrax japonica*, S. and Z.	Egonoki	0.97	0.60	0.52	87		114	141		105		104	151	0.06		
847	*Taxaceae*	*Podocarpus Nageia*, R. Br.	Nagi	0.88	0.55	0.47	82		97	157		127		117	56	0.12		0.60
848		*Taxus cuspidata*, S. and Z.	Ichii	0.90	0.58	0.50	80		128	73		147	138	108	67	0.12	0.33	0.27
849		*Torreya nucifera*, S. and Z.	Kaya	1.03	0.56	0.48	115		107	96		118	118	92	111			
850	*Tiliaceae*	*Tilia japonica*, Engler.	Shinanoki		0.51	0.45			86	122		113		98	113	3.00	0.90	0.78
851	*Trochodendraceae*	*Cercidiphyllum japonicum*, S. and Z.	Katsura	0.58	0.45	0.38	53	71	75	88	90	89		103	80	0.09	1.20	1.02
852		*Euptelaea polyandra*, S. and Z.	Fusazakura	0.93	0.64	0.51	82		95	95		94		83	87	0.57	0.18–0.27	0.12–0.18
853	*Ulmaceae*	*Aphananthe aspera*, Planch.	Mukuenoki	1.02	0.68	0.58	76		93	107		100		116	125	0.45		
854		*Celtis sinensis*, Pers.	Enoki	0.94	0.60	0.52	81		77	74		79		89	97	1.26		
855		*Ulmus campestris*, Sm. var. *laevis*, Planch.	Harunire	0.94	0.62	0.54	74		81	97		70		86	131		0.42	0.36
856		*Ulmus campestris*, Sm. var. *major*, Planch.	Niganire	0.90	0.60	0.50	50		65	62		60		84	54			
857		*Ulmus montana*, Sm. var. *laciniata*, Trautv.	Ohiōnire	0.90	0.57	0.50	80		105	149		101		108				
858		*Ulmus parvifolia*, Jacq.	Akinire	0.94	0.61	0.53	77		87	71		73			94			
859		*Zelkowa acuminata*, Planch. form. *Keaki*.	Keaki	1.06	0.70	0.60	77	112	142	127	71	117	127	109	122	0.06	0.12	0.12

* Kiso-district in Honshū.

† Obi-district in Kyūshū.

THE WOODS OF MEXICO, CENTRAL AND SOUTH AMERICA AND THE WEST INDIES

Samuel J. Record

With the exception of the bulk density values recorded below, the available published data on mechanical properties of woods native to these countries are of doubtful reliability.

Bulk Density of Thoroughly Air-dry Samples

Values determined in the laboratory of the Yale School of Forestry

Index No.	Family	Genus and species	Common name	Place of growth of material tested	D_d g/cm³
860	*Aeanthaeeae*	*Bravaisia floribunda*, DC.	Sancho-araña	Colombia	0.53
861	*Amygdalaeeae*	*Lieania hypoleuea*, Benth.	Chozo	Guatemala	1.03
862		*Moquilea tomentosa*, Benth.	Oity	Brazil	0.98
863	*Anaeardiaeeae*	*Anaeardium rhinoearpus*, DC.	Espavé	Panama	0.54
864		*Astronium balansae*, Engl.	Urunday	Argentina	1.00–1.30
865		*Astronium fraxinifolium*, Schott.	Gonçalo Alves	Brazil	0.85–1.00
866		*Loxopterygium sagotii*, Hook. f.	Hoobooballi	British Guiana	0.60–0.70
867		*Tapirira guianensis*, Aubl.	Duka	British Guiana	0.54
868		*Sehinopsis lorentzii*, Engl.	Quebracho colorado	Argentina	1.15–1.35
869	*Anonaeeae*	*Oxandra laneeolata*, (Sw.) Baill.	Yaya, lancewood	Cuba	0.98
870	*Apoeynaeeae*	*Aspidosperma polyneuron*, Muell. Arg.	Peroba rosa	Brazil	0.70
871		*Aspidosperma quebraeho-blaneo*, Sehl.	Quebraeho blaneo	Argentina	0.90–1.00
872		*Aspidosperma tomentosum*, Mart.	Guatambú	Brazil	0.77
873		*Aspidosperma vargasii*, C. DC.	Amarillo	Venezuela	0.90–0.95
874	*Aquifoliaeeae*	*Ilex* sp.	Kakatara-balli	British Guiana	0.80
875	*Araliaeeae*	*Didymopanax morototoni*, (Aubl.) D. and P.	Yagrume	Tropical Amerieа	0.45
876	*Betulaeeae*	*Alnus* sp.	Jaul	Costa Riea	0.47
877	*Bignoniaeeae*	*Creseentia eujete*, L.	Cujete	Tropical Amerieа	0.60
878		*Jaearanda eopaia*, (Aubl.) D. Don	Fotui	British Guiana	0.40–0.47
879		*Tabebuia donnell-smithii*, Rose	Prima vera	Mexieo	0.45–0.50
880		*Teeoma*, spp.	Lapacho, guayacan	Tropical America	0.95–1.25
881		*Teeoma pentaphylla*, Juss.	Roble	Tropical Amerieа	0.60–0.68
882		*Teeoma peroba*, Reeord	Ipé peroba	Brazil	0.70–0.83
883	*Bombaeaeeae*	*Bombaeopsis* spp.	Saqui-saqui	Venezuela	0.41–0.59
884		*Bombax* spp.	Imbirussú	Brazil	0.24–0.40
885		*Cavanillesia platanifolia*, H. B. K.	Bongo	Panama	0.10
886		*Ceiba pentandra*, (L.) Gaertn.	Ceibo	Tropical Amerieа	0.40–0.45
887		*Chorisia speeiosa*, St. Hil.	Samohú	Argentina	0.35–0.45
888		*Oehroma* spp.	Balsa	Tropical Amerieа	0.12–0.20
889		*Quararibea* sp.	Veroity	Brazil	0.72
890	*Boraginaeeae*	*Auxemma gardneriana*, Miers	Páo braneo	Brazil	0.70
891		*Cordia geraseanthoides*, H. B. K.	Boscote	Mexieo	0.97
892		*Cordia geraseanthus*, L.	Laurel	Central Amerieа	0.61
893		*Cordia goeldiana*, Huber	Frei-jo	Brazil	0.60
894		*Patagonula amerieana*, L.	Guayabí	Argentina	0.85–0.90
895	*Burseraeeae*	*Bursera gummifera*, (L.) Sargent	West Indian birch	West Indies	0.35–0.40

Index No.	Family	Genus and species	Common name	Place of growth of material tested	D_d g/cm³
896	*Cancllaccac*	*Canella winterana*, Gaertn.	Canela	West Indies	1.10
897	*Celastraccac*	*Goupia glabra*, Aubl.	Cupiúba	Brazil	0.82–0.88
898		*Maytcnus obtusifolia*, Mart.	Carne d'anta	Brazil	0.82
899	*Combretaceac*	*Tcrminalia* sp.	Naranjo	Guatemala	0.65–0.75
900		*Terminalia januarensis*, DC.	Araça	Brazil	0.77
901	*Cunoniaccae*	*Weinmannia trichospcrma*, Cav.	Tenio	Chile	0.59
902	*Dilleniaccae*	*Curatella amcricana*, L.	Chaparro	Tropieal Ameriea	0.77
903	*Eucryphiaccae*	*Eucryphia cordifolia*, Cav.	Ulmo	Chile	0.63
904	*Euphorbiaceac*	*Gymnanthes lucida*, Sw.	Aité	Cuba	1.00–1.20
905		*Hieronymia alchorncoidcs*, Fr. Allem.	Urueurana	Brazil	0.72
906		*Hippomane mancinclla*, L.	Manzanillo	West Indies	0.68
907		*Hura crepitans*, L.	Javillo, possum wood	Tropical Ameriea	0.36–0.44
908	*Flacourtiaccae*	*Cascaria praecox*, Gris.	Zapatero, W. Ind. boxwood	Venezuela	0.80–0.90
909		*Homalium* sp.	Angelino	Venezuela	0.75–0.85
910	*Guttifcrae*	*Calophyllum calaba*, Jaeq.	Santa María	Central America	0.68–0.74
911		*Mammca amcricana*, L.	Mamey	West Indies	0.90
912		*Platonia insignis*, Mart.	Paeouri	Freneh Guiana	0.86
913		*Symphonia globulifera*, L. f.	Waikey, chewstick	British Honduras	0.65–0.70
914	*Humiriaccae*	*Humiria floribunda*, Mart.	Bastard bullet wood	British Guiana	0.85–0.92
915	*Juglandaccac*	*Juglans australis*, Gris.	Nogal	Argentina	0.56
916	*Lauraceae*	*Aniba panurensis*, Mez	Bois de rose	Freneh Guiana	0.60–0.68
917		*Nectandra* sp.	Determa	British Guiana	0.65–0.70
918		*Nectandra* sp.	Embuia	Brazil	0.70–0.76
919		*Ncctandra* sp.	Waibaima	British Guiana	1.15
920		*Ncctandra rodioci*, Sehomb.	Greenheart	British Guiana	1.06–1.23
921		*Persea linguc*, Nees	Lingue	Chile	0.55
922		*Phocbc ambigens*, Blake	Guambo	Honduras	0.50
923		*Phocbe porphyria*, (Gris.) Mez	Laurel negro	Argentina	0.50–0.80
924		*Silvia navatium*, Fr. Allem.	Tapinhoan	Brazil	0.86–1.00
925	*Lccythidaccac*	*Cariniana legalis*, (Mart.) Kuntze	Jequitibá	Brazil	0.50–0.70
926		*Cariniana pyriformis*, Miers	Albareo, Colombian mahogany	Colombia	0.65–0.70
927		*Chytroma jarana*, Huber	Jaraná	Brazil	0.98
928		*Eschwcilcra corrugata*, Miers	Manbarklak	Duteh Guiana	1.21
929		*Lecythis ollaria*, L.	Sapucaia	Brazil	0.95
930	*Lcguminosac*	*Andira vcrmifuga*, Mart.	Angelim amargoso	Brazil	0.65
931		*Apulcia praecox*, Mart.	Iberá-peré	Argentina	0.80–0.95
932		*Bowdichia* sp.	Sucupira	Brazil	1.00
933		*Brya cbenus*, DC.	Granadillo	Cuba	1.20
934		*Caesalpinia cchinata*, Lam.	Páo brasil, Pernambuco wood	Brazil	0.98–1.24
935		*Cacsalpinia granadillo*, Pittier	Ebano, coffee wood, partridge	Venezuela	1.10–1.20
936		*Cacsalpinia melanocarpa*, Gris.	Guayaean negro	Argentina	1.10–1.30
937		*Ccntrolobium* spp.	Araribá	Brazil	0.65–0.90
938		*Copaifcra officinalis*, (L.) Willd.	Copaiba	Colombia	0.70
939		*Dalbcrgia* sp.	Honduras rosewood	British Honduras	0.93–1.08
940		*Dalbergia nigra*, Fr. Allem.	Jacarandá, Brazilian rosewood	Brazil	0.85
941		*Dalbergia retusa*, Hemsl.	Cocobolo	Central America	0.99–1.22
942		*Dialium divaricatum*, Vahl.	Jutahy peba	Brazil	0.90
943		*Dicorynia paracnsis*, Benth.	Angélique	Freneh Guiana	0.75–0.90
944		*Dimorphandra mora*, B. and H.	Mora	British Guiana	0.97–1.00
945		*Diplotropis* sp.	Zwarte kabbes	Dutch Guiana	1.15
946		*Diptcryx odorata*, Willd.	Tonea bean	British Guiana	1.20
947		*Enterolobium cyclocarpum*, (Jaeq.) Gris.	Guanaeaste	Central America	0.35–0.60
948		*Epcrua falcata*, Aubl.	Wallaba	British Guiana	0.90
949		*Erythrina crista-galli*, L.	Ceibo	Argentina	0.25
950		*Eysenhardtia polystachia*, (Ort.) Sarg.	Palo dulee	Mexico	0.87
951		*Gleditschia amorphoidcs*, (Gris.) Taub.	Espina eorona	Argentina	0.86–0.95
952		*Hacmatoxylon campcchianum*, L.	Logwood	British Honduras	1.00
953		*Holocalyx balansac*, Mieh.	Alecrin	Argentina	1.00
954		*Hymcnaea courbaril*, L.	Courbaril, algarroba, loeust	Tropieal Ameriea	0.80–1.05
955		*Lysiloma sabicu*, Benth.	Sabicú	Cuba	0.77
956		*Mclanoxylon brauna*, Sehott.	Braúna	Brazil	1.00
957		*Myrocarpus frondosus*, Fr. Allem.	Cabreúva	Brazil	0.87–0.97
958		*Myroxylon toluifcrum*, H. B. K.	Oleo vermelho	Brazil	1.00

Index No.	Family	Genus and species	Common name	Place of growth of material tested	D_d g/cm³
959		*Peltogyne paniculata*, Benth.	Purpleheart	British Guiana	1.00
960		*Peltophorum adnatum*, Gris.	Sabicú moruro	Cuba	1.02
961		*Peltophorum vogelianum*, Benth.	Caña fistola	Argentina	0.75–1.04
962		*Piptadenia* sp.	Curupay	Argentina	1.03
963		*Piptadenia rigida*, Benth.	Angico	Argentina	0.95
964		*Pithecolobium arboreum*, (L.) Urb.	Moruro	Cuba	0.74
965		*Pithecolobium racemiflorum*, Ducke	Bois serpent	French Guiana	1.15
966		*Pithecolobium vinhatico*, Record	Vinhatico de espinho	Brazil	0.60
967		*Plathymenia reticulata*, Benth.	Vinhatico castanho	Brazil	0.56–0.65
968		*Platycyamus regnellii*, Benth.	Pereira	Brazil	0.75
969		*Platymiscium polystachyum*, Benth.	Roble colorado	Venezuela	1.00
970		*Pterogyne nitens*, Tul.	Ibiráro	Argentina	0.76–1.09
971		*Swartzia tomentosa*, DC.	Wamara	British Guiana	1.05–1.28
972		*Swetia panamensis*, Benth.	Billy Webb	British Honduras	1.00
973		*Tipuana speciosa*, Benth.	Tipa	Argentina	0.65
974		*Torresia cearensis*, Fr. Allem.	Umburana	Brazil	0.60
975		*Vouacapoua americana*, Aubl.	Acapú	Brazil	0.87–0.92
976		*Zollernia paraensis*, Huber	Páo santo	Brazil	1.30–1.33
977	*Magnoliaceae*	*Drimys winteri*, Forst.	Canelo	Chile	0.50
978	*Malpighiaceae*	*Byrsonima crassifolia*, H. B. K.	Nance	Mex., Centr. Amer.	0.70
979	*Malvaceae*	*Hibiscus elatus*, Sw.	Majagua	Cuba	0.65
980	*Melastomaceae*	*Mouriria pseudo-geminata*, Pittier	Pauji	Venezuela	0.82
981	*Meliaceae*	*Cabralea* spp.	Cancharana	Argentina	0.65
982		*Carapa guianensis*, Aubl.	Crabwood	British Guiana	0.60–0.75
983		*Cedrela* spp.	Cedro, cedar	Tropical America	0.37–0.70
984		*Guarea trichilioides*, L.	Muskwood	Jamaica	0.50–0.55
985		*Swietenia* spp.	Caoba, mahogany	Tropical America	0.45–0.85
986		*Trichilia alta*, Blake.	Pimenteira	Brazil	0.72
987	*Monimiaceae*	*Laurelia aromatica*, Juss.	Laurel	Chile	0.53
988	*Moraceae*	*Bagassa guianensis*, Aubl.	Tatajuba	Brazil	0.80
989		*Brosimopsis diandre*, Blake	Leiteira	Brazil	0.75
990		*Brosimum columbianum*, Blake	Guayamero	Colombia	0.81
991		*Brosimum paraense*, Huber	Satiné	French Guiana	0.98–1.05
992		*Cecropia adenopus*, Mart.	Ambay	Argentina	0.44
993		*Chlorophora tinctoria*, Gaud.	Mora, fustic	Tropical America	0.93–0.99
994		*Clarisia racemosa*, R. and P.	Oitiçica	Brazil	0.50–0.60
995		*Perebea* sp.	Kapiteinhout	Dutch Guiana	0.68
996		*Piratinera guianensis*, Aubl.	Letterhout, letterwood	Dutch Guiana	1.20–1.35
997	*Myristicaceae*	*Virola bicuhyba*, Warb.	Bicuiba	Brazil	0.63–0.72
998		*Virola sebifera*, Aubl.	Yayamadou	French Guiana	0.60
999	*Myrsinaceae*	*Rapanea laetevirens*, Mez.	Canelon	Argentina	0.55
1000	*Olacaceae*	*Minquartia guianensis*, Aubl.	Acaricuára	Brazil	0.98
1001	*Phytolaccaceae*	*Gallesia scorododendron*, Casar.	Páo d'alho	Brazil	0.58
1002	*Pinaceae*	*Araucaria brasiliana*, Lamb.	Pinheiro do Paraná	Brazil	0.50–0.60
1003	*Polygonaceae*	*Coccoloba uvifera*, L.	Uvero	Tropical America	0.98–1.10
1004		*Ruprechtia* sp.	Virarú	Argentina	0.66–0.76
1005	*Proteaceae*	*Roupala brasiliensis*, Kl.	Páo concha	Brazil	0.80–1.00
1006	*Rubiaceae*	*Calderonia salvadorensis*, Standl.	Brasil	Salvador	0.60
1007		*Calycophyllum candidissimum*, (Vahl.) DC.	Dágame, salamo, degame	W. I., Centr. Amer.	0.80
1008		*Calycophyllum multiflorum*, Gris.	Palo blanco	Argentina	0.92–1.03
1009		*Genipa americana*, L.	Jagua	Tropical America	0.73–0.84
1010		*Sickingia* sp.	Arariba	Brazil	0.88
1011	*Rutaceae*	*Amyris balsamifera*, L.	Amyris	Venezuela	0.99–1.10
1012		*Balfourodendron riedelianum*, Engl.	Guatambú	Argentina	0.75
1013		*Esenbeckia leiocarpa*, Engl.	Guarantán	Brazil	0.97–1.10
1014		*Euxylophora paraensis*, Huber	Páo amarello	Brazil	0.81
1015		*Zanthoxylum flavum*, Vahl.	West Indian satinwood	West Indies	0.90
1016	*Salicaceae*	*Salix humboldtiana*, Willd.	Sauce colorado	Argentina	0.44
1017	*Sapotaceae*	*Achras zapota*, L.	Nispero	Central America	1.09
1018		*Labourdonnaisia albescens*, Benth.	Almique	Cuba	0.97
1019		*Lucuma procera*, Mart.	Mucuri	Brazil	0.90
1020		*Mimusops* sp.	Massaranduba	Brazil	0.85–1.10
1021		*Mimusops globosa*, Gaertn.	Bullet wood	British Guiana	0.90–1.25

Index No.	Family	Genus and species	Common name	Place of growth of material tested	D_d g/cm^3
1022		*Pradosia latescens*, (Vell.) Radlk.	Buranhem	Brazil	0.94
1023		*Sideroxylon mastichodendron*, Jacq.	Jocuma	Cuba	0.95–1.10
1024	*Simarubaceae*	*Quassia amara*, L.	Quassia	Surinam	0.50
1025		*Simaruba amara*, Aubl.	Marupá	Brazil	0.40–0.50
1026	*Sterculiaceae*	*Sterculia* sp.	Imbira quiaba	Brazil	0.25
1027	*Theaceae*	*Caryocar villosum*, Pers.	Piquiá	Brazil	0.81
1028	*Tiliaceae*	*Guazuma ulmifolia*, Lam.	Guacima	Tropical America	0.55
1029		*Luehea divaricata*, Mart.	Açoita-cavallo	Brazil	0.60
1030	*Ulmaceae*	*Celtis tala*, Gill.	Tala	Argentina	0.60–0.85
1031		*Phyllostylon brasiliensis*, Cap.	Baitoa, San Domingan boxwood	Dominican Repub.	0.95
1032	*Verbenaceae*	*Avicennia nitida*, Jacq.	Mangle prieto	Tropical America	0.95–1.10
1033		*Petitia domingensis*, Jacq.	Capá	West Indies	0.95
1034		*Vitex longeracemosa*, Pittier	Jocote de mico	Guatemala	0.70
1035	*Vochysiaceae*	*Qualea rosea*, Aubl.	Cèdre gris	French Guiana	0.65
1036		*Vochysia guatemalensis*, J. D. Smith	San Juan	Guatemala	0.42
1037	*Zygophyllaceae*	*Bulnesia arborea*, Engl.	Vera	Venezuela	1.10–1.25
1038		*Guaiacum officinale*, L.	Guayacan, lignum-vitae	West Indies	1.10–1.40

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DENSITY ARRANGEMENT

In the arrangement below, the lightest and heaviest woods are listed in the order (descending) of their bulk-densities in the air-dried condition. The bold-face numbers represent intervals on the density scale. The other numbers are the index numbers of the woods arranged in descending order of their densities. Bulk density = weight of air-dry piece divided by its bulk volume.

ARRANGEMENT PAR DENSITÉ

Dans l'arrangement ci-dessous les bois les plus légers et les plus lourds sont indiqués dans l'ordre (descendant) de leur densité apparente dans les conditions de séchage à l'air. Les nombres en caractères gras représentent les intervalles de l'échelle des densités. Les autres nombres sont les nombres index des bois disposés dans l'ordre descendant de leurs densités. Densité apparente = poids de la pièce séchée à l'air divisé par son volume apparent.

ANORDNUNG DER DICHTE

In der Anordnung unten sind die leichtesten und schwersten Hölzer in absteigender Reihe ihrer Dichten im Luft trockenem Zustande angegeben. Die hervorgehobenen Zahlen bezeichnen die Intervalle an der Dichteskala. Die anderen Zahlen sind die Indexnummern der angegebenen Hölzer in absteigender Reihe ihrer Dichten. Raumgewicht = Gewicht des Luft trockenen Stückes dividiert durch sein Volumen.

ORDINE SECONDO LE DENSITÀ

Nell'elenco che segue, i legni più leggeri e i più pesanti sono indicati nell'ordine decrescente delle loro densità nello stato di essiccamento all'aria. I numeri marcati in nero rappresentano gli intervalli nella scala delle densità. Gli altri numeri sono i numeri indice dei legni disposti in ordine decrescente delle loro densità. Densità apparente = peso del pezzo seccato all'aria diviso per il suo volume.

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ARTIFICIAL LUMBERS

The data given below are intended to illustrate the order of magnitude of some of the properties found for samples of certain artificial materials manufactured in board form for special uses. Since the properties of such materials vary with the method of manufacture, and as such methods are constantly being improved, the actual characteristics of the manufactured product at a given time can be obtained only from the manufacturer.

Common or trade name	Composition and structure	Bulk density, g/cm³	Strength kg/cm² Tr. = transverse Ten. = tensile Cr. = crushing	Approximate thermal conductivity k = 10^{-5}A g-cal cm^{-2} sec^{-1} (°C, cm^{-1})$^{-1}$ *cf.* p. 312 (4) A
Asbestos mill board	Asbestos + binder	1.0		29
Asbestos wood	Asbestos + cement	2.0	1050 Cr. (3) 246 Tr.	93
Asphalt roofing	Felt saturated with asphalt	0.9		24
Celotex*	Felted bagasse fibers	0.19 to 0.21	2.25 Tr. 26.2 Ten. (2)	10
Cork board	Cork, no binder	0.13		10
Cork board	Cork + bituminous binder	0.25		12
Insulite	Pressed wood pulp	0.19	1.62 Tr. 11.7 Ten. (2)	10 13
Lith board	Mineral wool, vegetable fibers + binder	0.2		
Sheet rock or plaster board	Gypsum + wood shavings		2.04 Tr. 12.3 Ten. (2)	
Wall board (gypsum)	Gypsum			80
Wall board	Stiff paper	0.7	13 Ten. (1)	17
Thermolath†	Vegetable fibers + waterproofing binder		11.9 Ten. (5) 1.14 Tr.	13 (5)

* Water absorptivity on 48 hr immersion = 10 vol. %.
† Water absorptivity on 48 hr immersion = 41 vol. %.

LITERATURE

(For a key to the periodicals see end of volume)

(1) Bird and Son, *O.* (2) Celotex Company, *Celotex.* (3) Johns-Manville Co., *Asbestos Wood.* (4) Van Dusen, *385*, **26**: 625; 20. (5) Waldorf Paper Products Co., *O.*